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22-An Archaeological Reconnaissance Survey to Locate Remains of Fort St. Joseph (20BE23) in Niles, Michigan

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Report Number: 22

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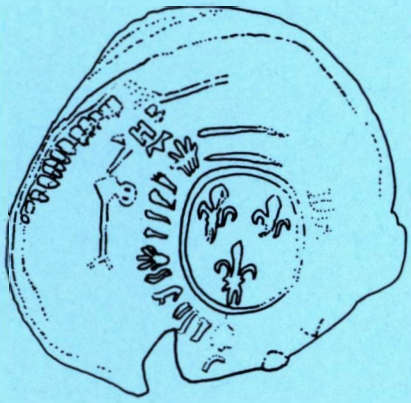

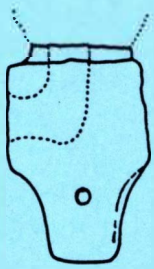

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Archaeological Report No. 22

Department of Anthropology

WESTERN MICHIGAN UNIVERSITY

AN ARCHAEOLOGICAL RECONNAISSANCE SURVEY TO LOCATE REMAINS OF FORT ST. JOSEPH (20BE23) IN NILES, MICHIGAN

edited by:

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With contributions by:

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Presented to:

Mr. Hal E. Springer, President
Support the Fort, Inc.
1011 Broadway
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Archaeological Report No. 22

Presented by:

Department of Anthropology
Western Michigan University
Kalamazoo, MI 49008-5032

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Cover illustration: A pair of cuff links, a lead cloth seal, and a Micmac pipe are among the 18th century objects recovered from the project area in Niles, Michigan.

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This study was conducted through funding provided by Support the Fort, Inc., with the assistance of the Michigan Humanities Council.

ABSTRACT

An archaeological reconnaissance survey was conducted in search of material remains of Fort St. Joseph in a 15-acre parcel owned by the City of Niles, Michigan. The French established the settlement in 1691 for religious, military, and commercial purposes and it served as an important frontier outpost for nearly a century. The British came to control the fort in 1761 until the Spanish briefly captured it two decades later. The site, which was nominated to the National Register of Historic Places in the 1970s, has local, regional, national, and global significance. Its changing fortunes have given Niles the nickname, "The City of Four Flags." The use of the parcel as a landfill in the 20th century has obscured the exact location of the fort.

Documentary evidence suggested that the fort was indeed located within the project area. A walkover survey, subsurface testing, backhoe trenching, informant interviews, and geophysical applications were employed to locate physical evidence of past land-use practices in the parcel. Evidence of Native American (pre-Contact?) through 20th century activities was identified. Native American remains consist of chipping debris, two projectile points, a few ceramic sherds, and three stone pipe fragments on the terraces overlooking the floodplain. Their distribution suggests limited use of the area, perhaps into the historic period. A light scatter of 18th and 19th century objects was also identified on these terraces. Bricks, nails, and ceramics were probably associated with the farmstead and barn that occupied the site when intensive collector activity took place prior to the 1920s. Other temporally diagnostic artifacts (a hand wrought nail, window and bottle glass, a musket ball) likely derive from colonial activity in the vicinity. Much of the area is now covered by a 20th century landfill. Testing of the landfill was limited to the placement of three backhoe trenches that were dug through the fill to examine the old ground surface for historic remains with equivocal results.

The most significant findings of the survey are the materials that were brought to our attention by a local amateur collector who had used a metal detector to identify and recover a collection of predominantly metal colonial artifacts from the edge of the river in the project area. Subsequent subsurface testing located a smaller, but complementary assemblage of objects that include gun flints, gun parts, brass kettle fragments, lead waste, seed beads, and European earthenware ceramics. In addition, possible architectural remains were noted and a well-preserved assemblage of animal bones that probably derives from subsistence remains was collected. These materials appear to be associated with the colonial occupation of Fort St. Joseph. Further investigation is strongly recommended to determine the spatial extent of the deposits and assess their depositional context.

ACKNOWLEDGEMENTS

A number of individuals and institutions have shown interest in, and provided support for, this research project. First of all, I would like to thank Mr. Hal Springer and other members of Support the Fort, Inc. for inviting me to conduct this study. Their support has underwritten much of the background research, field work, data analysis, and report preparation.

Most of the field work was conducted by a small paid crew from Western Michigan University (WMU) assisted by a larger group of enthusiastic volunteers affiliated with WMU and Support the Fort. I appreciate all of their help. Others who aided our search for documentary information include the office staff of the Soil Conservation Service in Berrien Springs, Carol Bainbridge, Michael Smith, and Joseph Peyser. The field crew was treated to lunch, refreshments, and the hospitality of Donna and Mary Ellen Drolet through the duration of field work. This fostered a sense of camaraderie among all involved that even further enhanced the pleasure of surveying on those sunny October days. I am also thankful for the facilities, equipment, and supplies provided to the project by the Anthropology and Geosciences departments of WMU.

Several individuals read and commented on an earlier draft of this report which has greatly improved its readability and historical accuracy. For taking time out of their busy schedules, I thank Dean Anderson, Hal Springer, Joseph Peyser, and other members of Support the Fort. The artifact illustrations were drawn by Pamela Rups, Multimedia Specialist, WMU. Renee Lutes-Kurtzweil and Brian Lutes drafted several of the maps. Kanti Sandhu, WMU, photographed the artifacts illustrated in this report. My co-authors and I remain responsible for the interpretations of the findings and the contents of this report.

Michael S. Nassaney, Ph.D.
Principal Investigator
Fort St. Joseph Archaeological Project

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CHAPTER 1

INTRODUCTION

Michael S. Nassaney

This report documents the results of historical background research and an archaeological reconnaissance survey to locate physical remains of Fort St. Joseph. The work was conducted in the Fall of 1998 by the Department of Anthropology, Western Michigan University (WMU) under grants provided by Support the Fort, Inc. (STF) of Niles, Michigan and the Michigan Humanities Council. Background research involved a careful review of pertinent documents associated with the history of Native American, colonial, and Euroamerican activities in the area and their potential impact on the landscape associated with the Fort St. Joseph site (20BE23) which is listed on the National Register of Historic Places (Lowery 1972). The archaeological survey consisted of shovel testing, backhoe trenching, and the application of geophysics across portions of a 15-acre parcel of land owned by the city of Niles, Michigan, along the bank of the St. Joseph River (Figure 1.1).

PROJECT RATIONALE

The objective of the research was to identify material evidence associated with past land-use practices, particularly significant archaeological remains of a substantial late 17th and 18th century colonial occupation thought to be located in the project area. Documentary research suggested that the project area may correspond with the location of Fort St. Joseph which was established by the French for commercial, military, and religious purposes in 1691 and abandoned in the late 18th century (see Eringaard 1961; Hulse 1981; Lowery 1972; Peyser 1992). Since the precise location of the fort was lost to history, archaeological methods and techniques were necessary to detect physical evidence of activities associated with this colonial occupation. Such evidence, should it prove to exist in the project area, should be identified and eventually evaluated as part of a larger initiative to interpret the history of the region to the public.

STF is a non-profit organization dedicated to the identification and preservation of the remains of Fort St. Joseph. Currently, they sponsor an annual rendezvous in a park owned by the city of Niles located immediately north of the project area. The event is an opportunity for the public to view historical reenactments and for participants from throughout the region to meet, exchange ideas, and share their historical knowledge. The organization is also committed to supporting a reconstruction of the fort somewhere in the vicinity of the project

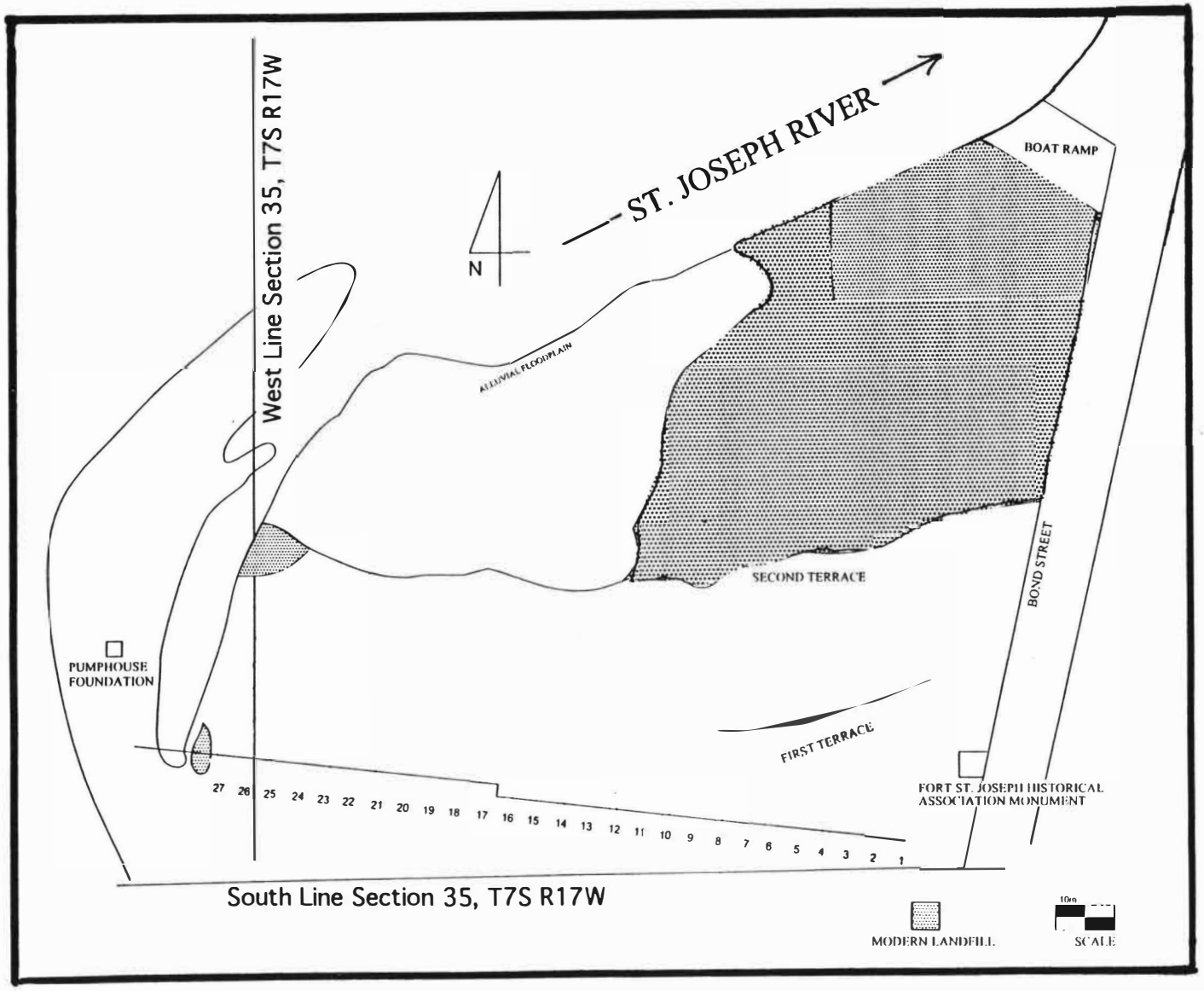

Figure 1.1. Physical and topographic features of the project area.

area. The City of Niles is agreeable to providing land for this purpose. Archaeological information on the location, size, and configuration of the fort, along with other architectural details, are essential for creating an accurate reconstruction since no detailed maps or descriptions of the fort are known to exist. This study is the first phase of a three-stage process that involves: (1) site location, (2) site evaluation, and (3) large-scale excavation aimed at data recovery for scholarly purposes and public interpretation.

DESCRIPTION OF THE PROJECT AREA

The project area is located in the city of Niles, Michigan. It lies at an elevation of 660-685 ft (203-211 m) ASL on a landform that includes two alluvial terraces (T1 and T2) and an active floodplain (Figure 1.2). The topographic relief gradually declines to the north-northwest toward the St. Joseph River, which on average is approximately 654 ft ASL, though it fluctuates seasonally (Graves 1974). This roughly triangular-shaped parcel is bounded by the St. Joseph River on the north and west, and Bond Street on the east. There is a boat landing along the river immediately north of the project area. The southern edge of section 35, Niles township, Berrien County T7S R17W separates the project area from a several-acre home lot currently occupied to the south.

Most of the parcel is heavily vegetated in secondary growth including dense brush in many areas. Common trees include northern red oak, yellow popular, white ash, and red maple (Larson 1980:138). There is a treeless corridor leading from the boat ramp parking lot south into the project area (Figure 1.1). The absence of trees here may be a reflection of relatively recent infilling, perhaps to raise the grade of a former wetland once created by the flow of Bloody Run (topographic changes are discussed in more detail in Chapter 2). This open area terminates about 30 m from the edge of a berm raised about 1-2 m above the alluvial floodplain. Sporadic paths cut through the woods connecting Bond Street with this lightly vegetated corridor and the river.

The soils in the project area are well suited to both aboriginal and recent cultivation practices, being fertile loams and sandy loams formed in alluvium. For example, the Shoals silt loam, which occupies a significant proportion of the study area, is today capable of producing more than 120 bushels of corn per acre without irrigation (Larson 1980:127). Soil fertility, coupled with a growing season usually in excess of 200 frost-free days, would have proven attractive to both native residents who practiced the mixed farming-specialized foraging subsistence strategy characteristic of groups such as the Miami and Potawatomi and the early Europeans who took up residence amongst them in the years

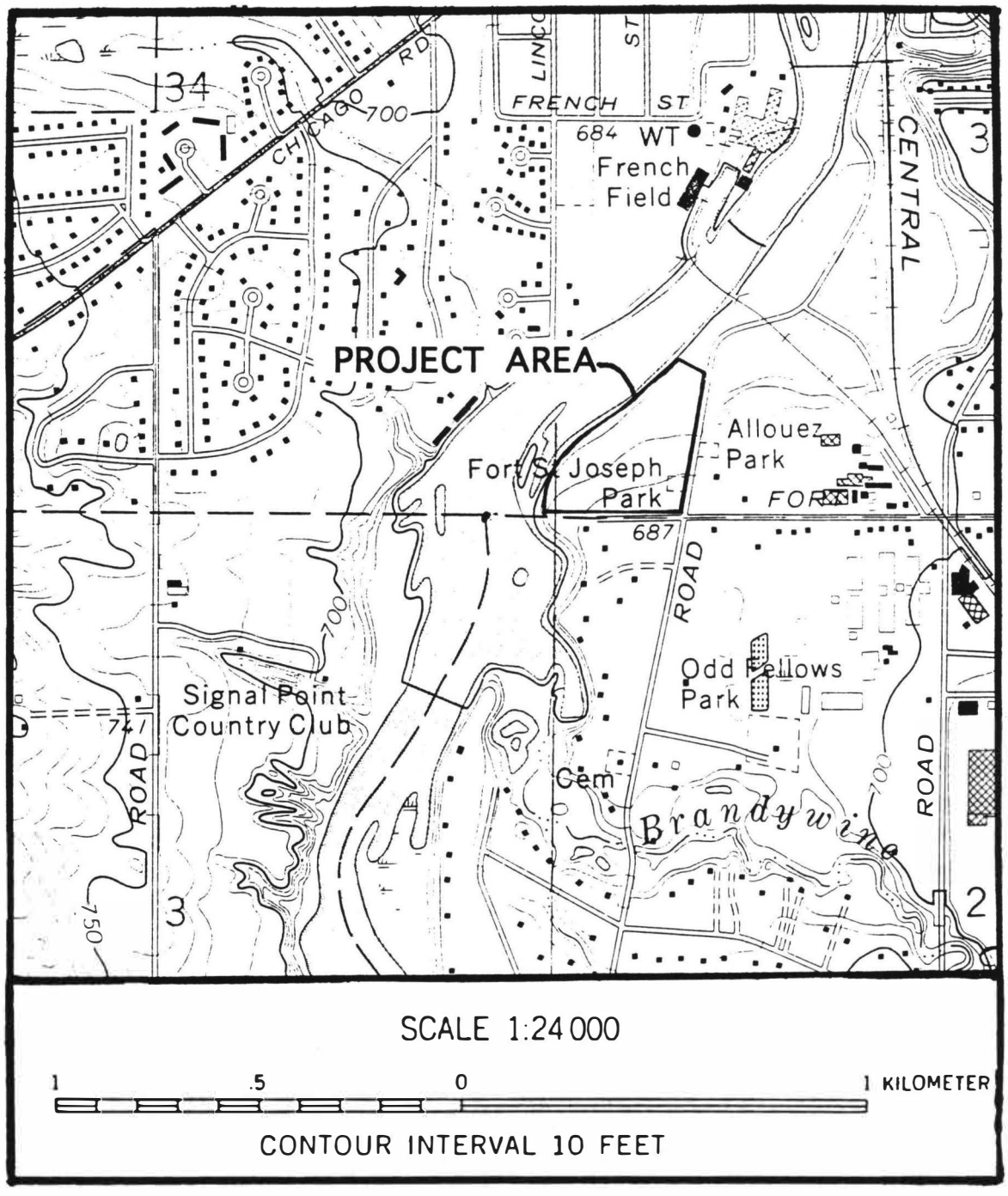

Figure 1.2. Topographic map of the project area from the Niles quadrangle (USGS 1980).

following initial contact. The terraces in the project area overlying the floodplain are comprised of Oshtemo sandy loams and could have also supported native horticulture though they would not have been as productive as the floodplain.

Much of the floodplain in the project area has been used as a sanitary landfill from at least the 1930s up until the 1960s (Graves 1974; Larson 1980:127; Lowery 1972). The result is an undulating surface with frequent evidence of concrete, glass, and other historic debris on the surface. Some areas of the floodplain are devoid of this fill, particularly along the river beginning about 100 m southwest of the boat ramp. Soil borings and shovel test pits have aided in delimiting the horizontal and vertical extent of the landfill and are discussed at greater length later in this report. The landfill covers much of the floodplain in the northern half of the project area, but does not extend to the river's edge in the west or up onto the terraces in the south. No determination was made as to whether the landfill contains any hazardous waste material, which may be of concern to future investigators in this area.

ORGANIZATION OF THIS REPORT

An overview of the environmental and historical context of the project area is presented in Chapter 2. This includes a summary of the history of human activity in the project area and past investigations related to Fort St. Joseph. In Chapter 3 we discuss the field methods that were implemented in this study and present our results. A more detailed discussion of our findings, particularly a description of the colonial artifacts recovered in our search, is found in Chapter 4. In the concluding chapter (5) we summarize the significance of this study, provide recommendations for future work, and suggest preliminary research questions and methodologies that may be implemented in subsequent stages of investigation.

CHAPTER 2

BACKGROUND RESEARCH

William Cremin and Michael S. Nassaney

ENVIRONMENTAL SETTING

Lying in the plateau highland physiographic division of southeastern Berrien County (Veatch and Partridge 1934:6-7), the Niles landscape is glacial in origin, comprising gently sloping moraines and till plains with flat, nearly level lake and outwash plains. The St. Joseph River, which passes through the city and marks the western and northern limits of the study area, is the largest stream in the county and in the southwestern portion of Michigan (Figure 2.1). After entering the county (and state) from Indiana, the St. Joseph flows in a north-northwesterly direction through the various moraines before emptying into Lake Michigan at the City of St. Joseph. While the St. Joseph River valley is marked by extensive bottomlands along its lower course, the river above Berrien Springs is often confined by the moraines. Thus, there is little floodplain development in the Niles area.

Since A.D. 1000, clearing the land for corn agriculture has undoubtedly impacted the landscape of the St. Joseph River valley. Nonetheless, as recently as the early 19th century, the vegetation of this region could still be described as a rich mosaic of plants including oak-hickory and beech-maple woodlands, prairies or oak openings, swamps and marshes. These associations afforded sap, greens, tubers and rhizomes in spring; summer-ripening fleshy fruits and berries; and the autumn nut mast. A broad range of animals was seen as economically important by Native and subsequent populations. Elk were attracted to the nutrient-rich prairie grasses, whereas deer enjoyed the abundant browse along the many edges created by the vegetative mosaic. Various waterfowl and upland birds like the turkey and passenger pigeon were plentiful, as were turtles and fish. Spawning lake sturgeon which sought out "shallows" in the St. Joseph River in spring were notable subsistence resources (Bettarel and Smith 1973:6-8). In sum, the Niles environs would certainly have afforded human residents with a rich array of plant and animal foods. The project area was also strategically located during the colonial and early industrial periods as documentary sources indicate.

HISTORICAL OVERVIEW

Examination of the state site files reveals that little if any professional

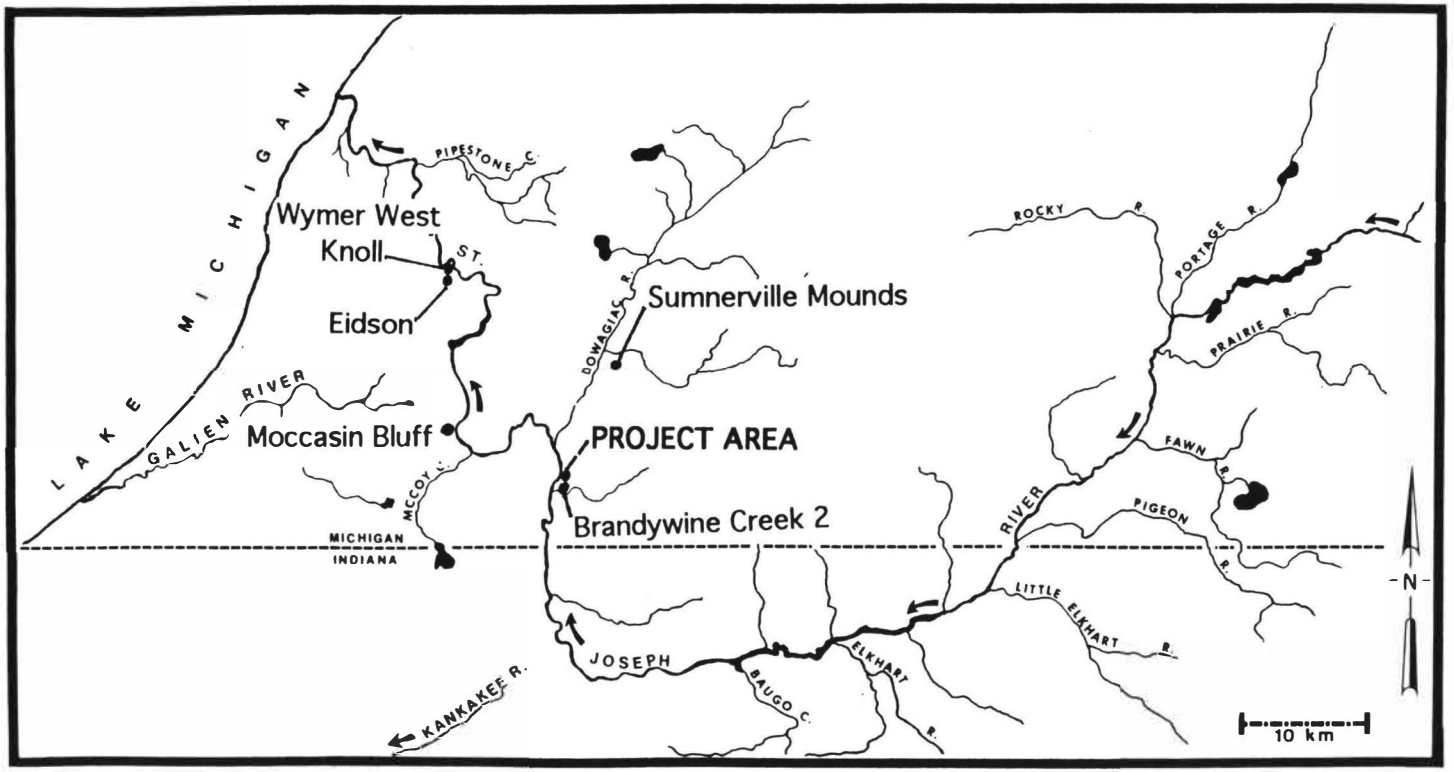

Figure 2.1. The St. Joseph River drainage in southwest Michigan showing the locations of sites discussed in the text.

archaeological attention has been given to the Niles environs and the project area, in particular, although several site numbers have been designated for the vicinity (e.g., 20BE357) (Barbara Mead, personal communication, 1998). And yet, by all indications, this is a very rich resource zone that long attracted human activity which likely left a significant archaeological signature. Documentary evidence included in the files supports the contention of Support the Fort that Fort St. Joseph (20BE23) lies within the proposed area of research. Site 20BE11, a crescent enclosure, and Fort St. Joseph 2 (20BE358), a "plowed flat" earth-work, may also refer to the same French fort given their proximity to 20BE23, but this will also require confirmation through field work. In addition, the documents identify no fewer than six historic Indian village sites (20BE2, 7, 12, 33, 218, and 392) within less than a mile of the presumed site of the fort, but none has as yet been identified on the ground through professional field work. All of these references suggest that there is high probability that the project area contains material remains associated directly or indirectly with the fort.

If we expand our scope to include the lower St. Joseph River valley of Berrien County, the broad outlines of Native history prior to European contact can be identified. As in other areas of the upper Midwest, the region probably first became habitable at the end of the Pleistocene epoch. The last 14,000 years (terminal Pleistocene and Holocene epoches in geologic time) represent a time of great environmental change in the St. Joseph River valley of southwest Michigan. The landscape was reconfigured in response to the ebb and flow of glacial ice and changes in lake level and stream gradient. Variations in atmospheric circulation patterns also altered the distribution and composition of plant and animal communities occupying this evolving landscape. Environmental change over time figures prominently in the human history of the region, from the initial arrival of Paleoindians during the millennia immediately following the retreat of the glaciers into the period of European settlement commencing two centuries ago.

The Pre-Contact History of the St. Joseph River Valley

The lifeways of the earliest occupants in the region are poorly understood, as not a single Paleoindian habitation or extractive site to date has been reported or excavated in the St. Joseph region. However, an abundant distribution of fluted projectile points has long been recognized on the basis of isolated surface finds (Lovis 1988:43). In this regard it is noteworthy that WMU survey crews have in recent years recorded fluted specimens which can be positively identified as Clovis and Cumberland points. These occur on farmland upstream from the project area along the middle St. Joseph River and its tributaries in St. Joseph County (Cremin and Quattrin 1987).

In the absence of archaeological site context, we must necessarily rely on chronometric dates obtained for sites located elsewhere and comparison of stylistic attributes in proposing that the Paleoindian occupation represented by these artifacts is brief and probably dates no earlier than 11,000 years BP (before present). And, with respect to Paleoindian economic pursuits, the point distribution and environmental data appear more consistent with some form of broad based opportunistic foraging rather than the specialized big game hunting associated with Clovis groups in western North America (Lovis 1988:44).

In a recent review of human prehistory in southwest Michigan, William Lovis (1988) has noted that a sparse archaeological record also confounds our efforts to evaluate human adaptation during much of the Archaic period (10,000-3,000 years BP). The rarity with which Early and Middle Archaic sites occur in this region can most probably be attributed to slow post-glacial environmental amelioration. However, by Late Archaic times (5,000 BP), modern climatic patterns had significantly increased the plant and animal biomass. For example, upland plant associations were established in which mast-producing species became dominant (e.g. oak-hickory forest). In addition, expansion of resource-rich aquatic and riparian habitats along the lake shoreline and in the lower river valley expanded in response to periodic variations in lake levels. These factors probably influenced the seasonally adjusted subsistence-settlement patterns of the Late Archaic foragers (Lovis 1988:44).

That site density and occupational intensity increased during the Late Archaic has been documented by Elizabeth Garland (1990b) during an extensive program of survey and excavation along the St. Joseph River near Berrien Springs. Here, in a narrow highway corridor crossing the valley, a series of four encampments along the bluff edge and on the river terrace attests to the growing importance of plant foods in the Late Archaic diet. The density and contents of substantial in-ground facilities for both processing and storage argue strongly for repeated site visitation with an eye toward the intensive harvesting of various nuts, fleshy fruits, and edible seeds abundantly available in the immediate site environs during late summer/early fall. It is further noteworthy that at one of these sites, Eidson (20BE122), achenes of cultivated sunflower (*Helianthus annuus*) have been retrieved from five features spanning the Archaic-Woodland transition (Garland 1986:75).

Although Early Woodland Marion Thick pottery was long ago observed in a private collection from the Moccasin Bluff site near Buchanan, Michigan, excavations conducted at the site by the University of Michigan in 1948 revealed no ceramics associated with this component (Bettarel and Smith 1973). It was not until Garland excavated the four sites in the US-31 corridor about 8 km downstream that a substantial Early Woodland presence in the St. Joseph River valley was established. All yielded lithic artifacts and/or pottery of Early

Woodland types, and three produced features which are radiocarbon-dated to this period (ca. 2600-2000 BP) (Garland 1986:50).

At Eidson, a spatially discrete Early Woodland component occupies an area of about 1 ha. Two hundred pit features were encountered here, 34 of which contained Marion Thick ceramics (Garland 1986:50). Although preserved animal bone was rare, the abundant plant remains, especially nutshell, point to late summer/early fall occupation (Garland 1986:75). Garland's observations appear consistent with a pattern of seasonal residence in small camps proximal to both wetlands and stands of mast-producing species. At these locations pottery vessels may have been used in the extraction and storage of nut oil (Garland 1986:75; Lovis 1988:45-46).

Burial mounds and associated artifact assemblages of Middle Woodland age first appear in this region about 2000 BP, but evidence for intensive participation in Hopewellian interaction is limited. At Moccasin Bluff, utilitarian Havana Tradition (Illinois) ceramics are well represented, and at least one private collection from this site contains several vessels of Hopewell Ware. Corner-notched points, slate gorgets, a copper celt, and a fragment of mica have also been reported. These are the sorts of cultural items shared in common with Sumnerville in Cass County, the most prominent Hopewellian Middle Woodland mound group in the entire St. Joseph region (Bettarel and Smith 1973:107-109).

Regrettably, Sumnerville attracted the attention of area collectors during the last century. Most of what we know of this component has been published in summary fashion together with data from the nine other Michigan and Indiana sites comprising Quimby's (1941) Goodall Focus. Recently, Garland (1990a) returned to Sumnerville, where she exposed evidence of a unique mortuary ritual postdating major mound construction at the site. She assigned this post-Hopewellian ceremonial activity to the terminal Middle Woodland Brainerd Phase.

Most popular subsistence models pertaining to the Middle Woodland period embrace continuation and intensification of foraging strategies initially established during the late Middle Archaic, together with increasing reliance on the cultivation (and domestication) of native seed plants and, to a much lesser extent, tropical cultigens. With this in mind, it is noteworthy that the occurrence of cultivated sunflower at the Eidson site spans the Late Archaic-Middle Woodland (Garland 1986:75) and that Parker (1996:309) has identified a single maize (corn) cupule in a feature at Eidson radiocarbon dated to 1,650 +/-70 B.P. (uncalibrated).

The transition to the Late Woodland is underway by about A.D. 500 (1,450 BP), and this period formally concludes with historic contact. It is marked by the gradual shift from broad based foraging from small seasonally reoccupied camps to increased reliance on cultivation of the "triad" of corn, beans, and squash at base settlements (summer agricultural villages) concentrated in the lower valley.

The settlement pattern also includes sites devoted to the specialized exploitation of certain natural resources that are ancillary to main habitation areas (Cremin 1980, 1983; Lovis 1988:46).

In the St. Joseph River valley, only the Moccasin Bluff site reveals components spanning virtually the entire period. Prior to about A.D. 1000, changes in rim treatment and/or lip decoration on grit-tempered ceramic vessels and a shift from small side- and corner-notched points to small triangular points have been documented. There is, however, nothing to suggest that subsistence-settlement behavior changed markedly from the Middle Woodland period (Bettarel and Smith 1973:151©152).

Bettarel and Smith (1973: 152) noted that significant change took place in the community at Moccasin Bluff shortly after A.D. 1050. The change, designated the Moccasin Bluff Phase, is associated with the introduction of shell-tempered pottery and corn agriculture into the region. Garland (1991) has recently made an even more striking observation at the Wymer West Knoll site (20BE132), located just outside the US-31 highway corridor near Berrien Springs. Whereas the new ceramic technology at Moccasin Bluff is related to nearby northwest Indiana and the greater Chicago area, the generally contemporaneous Wymer ceramics bear strong resemblance to the American Bottom near St. Louis suggesting an assemblage of Middle Mississippian derivation! Moreover, 8-rowed corn is both ubiquitous and abundant in the features at this site. Does Wymer West Knoll document the arrival of a group from the south in the St. Joseph River valley about the time Mississippian populations were expanding from the central Mississippi valley?

The Late Prehistoric/Protohistoric Berrien Phase

At the dawn of history, southwest Michigan was the domain of the Berrien Phase people. This phase was initially defined by Bettarel and Smith (1973) at Moccasin Bluff and identified by them as a local manifestation of the geographically widespread Oneota Tradition. They emphasized its affinity with the Huber Phase of northwest Indiana and the greater Chicago area, proposed a temporal placement of A.D. 1400-1600, and suggested that the site represents a summer agricultural village. In the ensuing years, this temporal placement has become more firmly established as a result of WMU's research at several Berrien Phase extractive sites on the lower Kalamazoo River, most notably the Schwerdt sturgeon fishery and the Elam site (Cremin 1980, 1983). And, more recently, a series of radiocarbon dates (and an item of European trade brass) obtained for small Berrien Phase camps investigated on the lower Galien River have extended this phase into the mid-17th century (Cremin 1996:401-407).

Shell-tempered Berrien Series ceramics, as defined by Bettarel and Smith (1973), are nearly identical in shape, temper, surface treatment, and decoration to

the much better known Huber Phase pottery from sites in the Kankakee River valley and the Cal-Sag drainage. Nonetheless, James Brown (1990:125), who has examined the Berrien Series pottery from the lower Kalamazoo River sites, maintains that it should be retained as a distinct and possibly significant stylistic variant. He has noted, for example, that the very fine line lip notching on many Berrien Series vessels simply does not occur on Huber pots.

We need not rely solely on subtle variations in decorative treatment on shell-tempered vessels to differentiate these two contemporaneous phases or to distinguish the Berrien Phase from its predecessor in this region, the Moccasin Bluff Phase. Rather, it is the preponderance of plain shell-tempered pottery of the Berrien Series, with decoration usually confined to the vessel lip, and the late appearance of several grit-tempered companion types that really constitute the signature of this phase. These new ceramic types, Moccasin Bluff Scalloped Lip and Moccasin Bluff Notched Applique Strip, and perhaps a variant(s) of Moccasin Bluff Modified Lip, exhibit a more northerly distribution along the eastern Lake Michigan shoreline, with the St. Joseph region representing the southern limit of their known distribution (Cremin 1996:387).

Who are the makers of this pottery which, when combined with plain shell-tempered Berrien Series ceramics, serves to distinguish this phase? Could this pottery represent a people who arrived in southwest Michigan from the north about A.D. 1400, bringing their grit-tempered ceramics with them, and who, upon arriving in the St. Joseph region, expanded their inventory to include the shell-tempered pottery being locally produced here at the time? These same grit-tempered ceramic types occur later to the north in the absence of Berrien Series ceramics, which have yet to be identified north of the lower Kalamazoo River valley (Cremin 1996:390). This may indicate the flight of at least some of these same people from their southwest Michigan homes in the face of Iroquoian incursions beginning about A.D. 1640 (Hunt 1960:108). Similar grit-tempered pottery occurs at 17th century sites like Dumaw Creek on the Pentwater River of Oceana County (Quimby 1966a), Summer Island in the northern Lake Michigan basin (Brose 1970), and Rock Island II on an island in the mouth of Green Bay (Mason 1986). For reasons presented elsewhere (Cremin 1992, 1996), this interpretation of the data seems to be most plausible if one follows Clifton (1977, 1978, 1986), Mason (1986), and Quimby (1966a) in identifying southwest Michigan (and the Berrien Phase) as the late prehistoric/protohistoric estate of the Potawatomi Indians.

The French Arrive on the "River of the Miamis"

The St. Joseph River enters history as the "River of the Miamis." The origin of this name remains shrouded in mystery. Many early secondary accounts (e.g., Ellis 1880 citing Parkman) attribute this to Marquette. Some claim he used the St. Joseph-Kankakee portage and the St. Joseph River to reach Lake

Michigan in the spring of 1675, as he sought to return to his mission at St. Ignace from the Illinois Country before death claimed him. However, there is good reason to doubt that he used this route, let alone found the valley to be occupied by Miami Indians.

During his return visit to the Illinois Country in 1674-1675, illness forced Marquette and his two companions to winter near the Chicago portage. When they resumed their journey in spring, they paused briefly at the very location where he and Joliet, on their return from the Illinois Country 18 months earlier, had begun their portage to Lake Michigan. Being uncertain as to whether his health would permit him to stay the summer among the Illinois at Kaskaskia, Marquette determined to "leave here part of our goods, those with which we can dispense, and especially a sack of corn" (Thwaites 1990:58). Surely, Marquette and his companions, as they hurried to return to St. Ignace a few days later, would have chosen the Chicago portage—the route along which they had cached supplies in the event that a quick return trip became necessary!

Marquette's Jesuit Superior, Claude Dablon, whose narrative has been incorporated into the unfinished journal of Marquette's second voyage, introduces the issue of an unfamiliar return route and very possibly represents the source of the confusion which exists regarding the portage used by Marquette and his companions. Instead, it seems more likely that following passage from the Illinois River to Lake Michigan by means of the familiar Chicago portage, they coasted the unfamiliar "southern shore of the lake" (Thwaites 1990:65) and ascended the eastern shoreline as far as the Pere Marquette River where the priest died.

In November 1679, LaSalle arrived at the mouth of the "River of the Miamis." A Mohegan Indian hunter, who guided LaSalle to this location, may have provided the misnomer. LaSalle and his men spent about a month here, preparing a harbor for his ship, the "Griffon," and constructing the stockaded enclosure (Fort Miami) that would serve as his base of operations on the bluff overlooking the river's mouth (Ellis 1880:14-15).

After remaining at Fort Miami for a month, and fearing that ice would make the river impassible if he delayed any longer, LaSalle instructed two of his men to remain behind. They were to await the arrival of his ship while he and the remainder of his company embarked on December 3 in search of the portage by which they would reach the Illinois River. During his ascent of the St. Joseph, including passage by the project area, LaSalle neither visited nor mentioned a single Indian settlement in the valley. In fact, the first "village" he mentions was not reached until the portage from the St. Joseph to the headwaters of the Kankakee River had been completed. Here, where the prairie ended and the marshes surrounding the series of ponds that gave rise to this river commenced, he came upon a mixed community of Miami-Mascouten-Wea Indians. The

remains of many buffalo were scattered over the prairie in the vicinity of this settlement (Anderson 1901:77).

From available documents it is not possible to ascertain whether this community at the headwaters of the Kankakee was a permanent settlement or a short-term seasonal encampment. However, traditional Miami subsistence-settlement practices, the very nature of this location, and the time of year (December) they were found here, suggest that these Indians were in their winter hunting camp. Inasmuch as both earlier and contemporaneous documents place the Miami in the land to the west of the southern end of Lake Michigan (Anderson 1901:191-193), it is reasonable to conclude that their permanent village would have been located some distance downstream and to the west of the headwaters of the Kankakee.

Elsewhere, Cremin (1996) has argued that a recent and ephemeral presence in the St. Joseph region at the time of this encounter is also consistent with the reported willingness of the Miami to abandon the area and relocate to LaSalle's newly established post in the Illinois Country in 1682. Be that as it may, when the Miami returned from Fort St. Louis, probably in 1684, they came in greater numbers. But they did not reoccupy their former place of residence on the portage. Rather, the Miami now established their principal village on the lower St. Joseph River so as to be near the mission that the Jesuit Claude Allouez established at Niles, Michigan, to serve them. The Brandywine 2 site (20BE15) is located on the same side of the river a short distance upstream from the old French mission and fort at Niles. It has a small, but predominantly Huber cord-marked ceramic assemblage (Bettarel and Smith 1973:143). A strong case for a Miami-Huber Phase connection could be made if the Brandywine 2 site proved to be the Miami village known through historical documents.

Now, the St. Joseph truly became the "River of the Miamis"! But their hold on the valley would prove to be short-lived. As the vanguard of a Potawatomi expansion (i.e., "return") from their refuge at Green Bay, including 200 fighting men, took up residence on the river in 1695, dominance began to shift in favor of the latter group (Kinietz 1972:309; Temple 1958:127).

The French Mission and Fort at Niles, Michigan

When the Miami Indians took up occupation of the St. Joseph River valley (1684?), Jesuit Claude Allouez accompanied them. An arch-rival of LaSalle, Allouez may have actually instigated the removal of the Miami from Fort St. Louis on the promise of establishing a mission among them. The precise founding date of his mission is uncertain, but it was already in existence in 1686 when the Governor-General of New France, Denonville, granted the Jesuits a tract of land along the river near the southern limits of present-day Niles,

Michigan. Louis XIV confirmed the grant in 1689 (Myers and Peyser 1991:12; Peyser 1992:43-44).

The historical documents are silent with respect to this mission until 1691, when Frontenac, who had succeeded Denonville as Governor-General, dispatched Courtmanche, together with a small detachment of soldiers, to construct a fort near the mission among the Miami Indians. Through time, this mission-garrison-trading post complex came to be known as Fort St. Joseph. The settlement was created to ensure the growth and protection of French trade interests and also provide an important communication link between the western Great Lakes and the Illinois Country (Myers and Peyser 1991:12; Peyser 1992:46).

Fort St. Joseph was the center of French-Indian interaction in the region. During the period 1698/1699-1717, the garrison was removed, and in 1712-1718 the mission was also closed as a consequence of the Fox Indian Wars, with appropriate curtailing of activities. However, throughout much of the 18th century a military detachment, *voyageurs*, merchants, and *habitants* (and their families) occupied the complex. A priest who visited annually and, of course, the Indians who were induced to establish their villages nearby also frequented it. Unfortunately, we lack good descriptions of daily life and the appearance of this complex. Only Father Charlevoix, who visited here in 1721, provides us with a glimpse of this establishment. He noted that it was located 20 leagues above the river's mouth and that it included a mission and a commandant's house. The latter was referred to as "the fort" because it was surrounded by a modest stockade. An artist's conception of what the fort may have looked like is shown in Figure 2.2. Nearby were located a Potawatomi and a Miami village (Myers and Peyser 1991:14).

Before the French and Indian War (1755-1762) formally ended, the French garrison was withdrawn. Whereas some 55 French families had been living in or near this post before the war, only about a dozen remained behind, supporting themselves through trade with the Indians. Several English traders who arrived here shortly after the British military occupied the fort in 1761 joined them. When this detachment of soldiers was destroyed during Pontiac's Rebellion of 1763, command of Fort St. Joseph fell to the old French merchant, Louis Chevalier, acting as British agent. Thereafter, vigorous commerce between the French and English traders and the Indians resumed (Cunningham 1961:67; Hulse 1981:61-62; Myers and Peyser 1991:18-19).

Between 1778 and the fort's final abandonment in February of 1781, a new player, the Americans, appeared in the Illinois Country. In 1779, British authorities responded by sending a detachment from Michilimackinac under Bennett to intercept an American expedition that might pass by Fort St. Joseph as it moved against Detroit. Bennett found the fort to be in a poor state of repair, and his men set about constructing an entrenchment to preclude an American assault. However, after a month's wait, with no sign of the Americans, and with

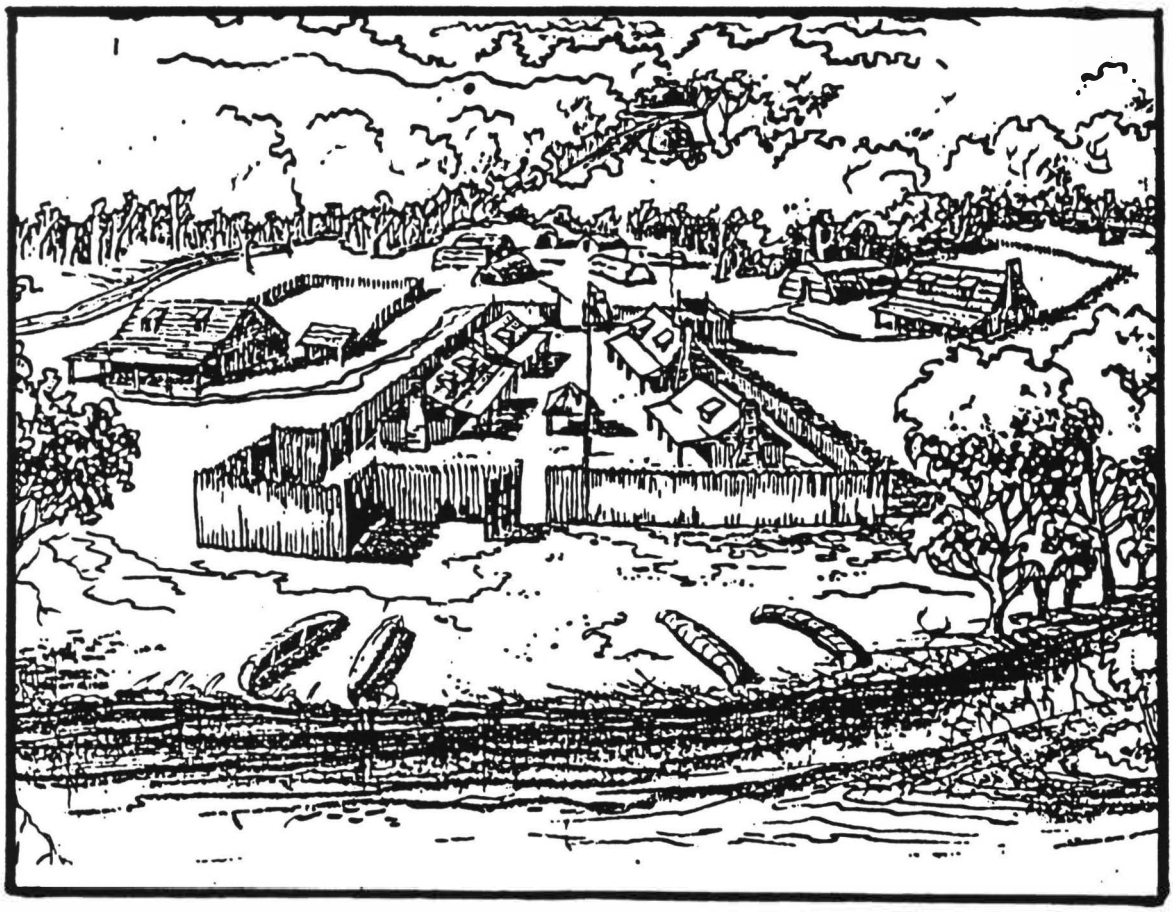

Figure 2.2. An artist's conception of Fort St. Joseph as it may have looked in 1750. This sketch, which is attributed to Jerry Schlundt, appeared in the *South Bend Tribune* sometime in the mid-1980s. Courtesy of Joseph Peyser.

supplies running low, his force returned to Michilimackinac without having seen action (Myers and Peyser 1991:19-20).

In the following year, authorities at Michilimackinac determined to return to Fort St. Joseph, on this occasion to remove the French population of between 8 and 15 households. While this task was accomplished, the post continued in use as a storehouse for the goods of English traders. The presence of English traders and their store of goods were perceived as a threat by the Americans as well as the Illinois French and their Indian allies. Following a failed raid under Hamelin, and now with the sponsorship of Cruzat, Spanish Governor at St. Louis, a substantial force under Poure attacked the fort and looted it of supplies. Fort St. Joseph was never again occupied, albeit a mixture of groups including English soldiers and traders, American military personnel, and a small lingering French population remained in the general vicinity (Hulse 1981:63; Myers and Peyser 1991:21).

Relocating French Fort St. Joseph

The precise location of the fort has been a matter of debate well into the 20th century. Peyser (1992:74) argued that the confusion likely resulted from maps that erroneously placed it on the landscape or the belief that there was more than one fort. To resolve the issue, Peyser examined about 200 maps in various French archives. These documents convinced him that the fort was located on the east side of the river just south of present-day Niles. For example, de Fer's map of Louisiana published in 1718 shows a cluster of settlements on the east side of the river in the vicinity of Niles (Figure 2.3). While a Miami population is indicated, Peyser interprets at least one of the symbols as designating a fortification (personal communication, 1999). He also cites numerous other documentary accounts to support his claim.

Earlier confusion is exemplified by the work of Eringaard (1961). He (1961:45) claimed that Charlevoix (1744) placed the site of the fort on the west side of the river adjacent to a Potawatomi village and he tried to reconcile this placement with others such as Hutchins (1762, 1778) who showed the fort on the east side of the river. Eringaard (1961:46) uncritically accepted the veracity of both descriptions and tried to explain the contradiction by arguing that the location of the fort was moved over time. He argued that since the major concern of the fort was defense in the early years, the French would have built it on a bluff (on the west bank) in a strategic location. Later, the fort was "moved to a position more easily accessible to water for the easy conveyance of trade goods," where Hutchins observed it years later (Eringaard 1961:46).

According to Peyser (1984), the so-called Charlevoix map was actually drawn by Nicholas Bellin (1703-1772) in France in 1744, using Charlevoix's 1721

Figure 2.3. Detail from a map of "La Louisiane" (de Fer 1718).

journal description which fails to identify the fort's precise location. Bellin's error in locating the fort was later copied by other contemporaneous mapmakers. He actually corrected the location in later maps (1755, 1757, and 1764), which all show the French fort on the east bank.

Thomas Hutchins, an American surveyor and geographer who later became a captain in the English army, visited the fort in 1762. He provided us with the last description of the resident community at Fort St. Joseph:

> Fort St. Joseph stands within a few yards of navigable water commanded by two high banks, one on each side of the river, and from its elevation appears to have been intended more as a place for traders to put their effects in than a work of defense to keep the natives at their proper distance. It is inhabited by about a dozen French families who chiefly support themselves by the trade they carry on with the Indians and notwithstanding the country is very rich about them, they raise nothing more than some Indian corn and make a little hay to support their horses and mules and a few milch cows, which seems to be all the stock they have (Cunningham 1961:72-73).

More importantly, the Hutchins maps of 1762 and 1778 (Tucker 1942: Plates LXXI and XXIX) (see Figures 2.4 and 2.5) clearly show the fort located on the east side of the river at Niles, Michigan, with a large Potawatomi village of 200 men on the west side across from it. His maps probably provide the basis for the Bradley Map of the United States (Tucker 1942: Plate LXXVIII), published in 1796, which also depicts the fort and the Potawatomi town on the river and in identical proximity to one another.

During the late 18th and early 19th centuries, various agencies prepared reports on Indian settlement along the St. Joseph River. This census-taking activity reveals the frequently shifting locations of 6-10 Potawatomi villages and the number of occupants who resided in them (Cremin 1992). None of these reports mentions or depicts the location of the old French fort at Niles, Michigan (Berthrong 1974).

In 1827, William Brookfield conducted the survey of Niles Township (T7S R17W) for the Government Land Office. While establishing the south line of Section 35, he recorded "an ancient fort in form of a cresant (sic). Banks 5 ft high encircled with a ditch 8 ft wide" at a location four rods north and two chains east of the southwest section corner, though he did not note it on the survey map (Figure 2.6). There are some who believe that Brookfield identified the location of the old fort, or at the very least Bennett's 1779 defensive entrenchment constructed nearby. Alternatively, a prehistoric earthwork is not outside the realm of possibility. Regardless, Niles surveyor Robert Prestine has since relocated Brookfield's earthwork, albeit no longer extant (Mumford 1997).

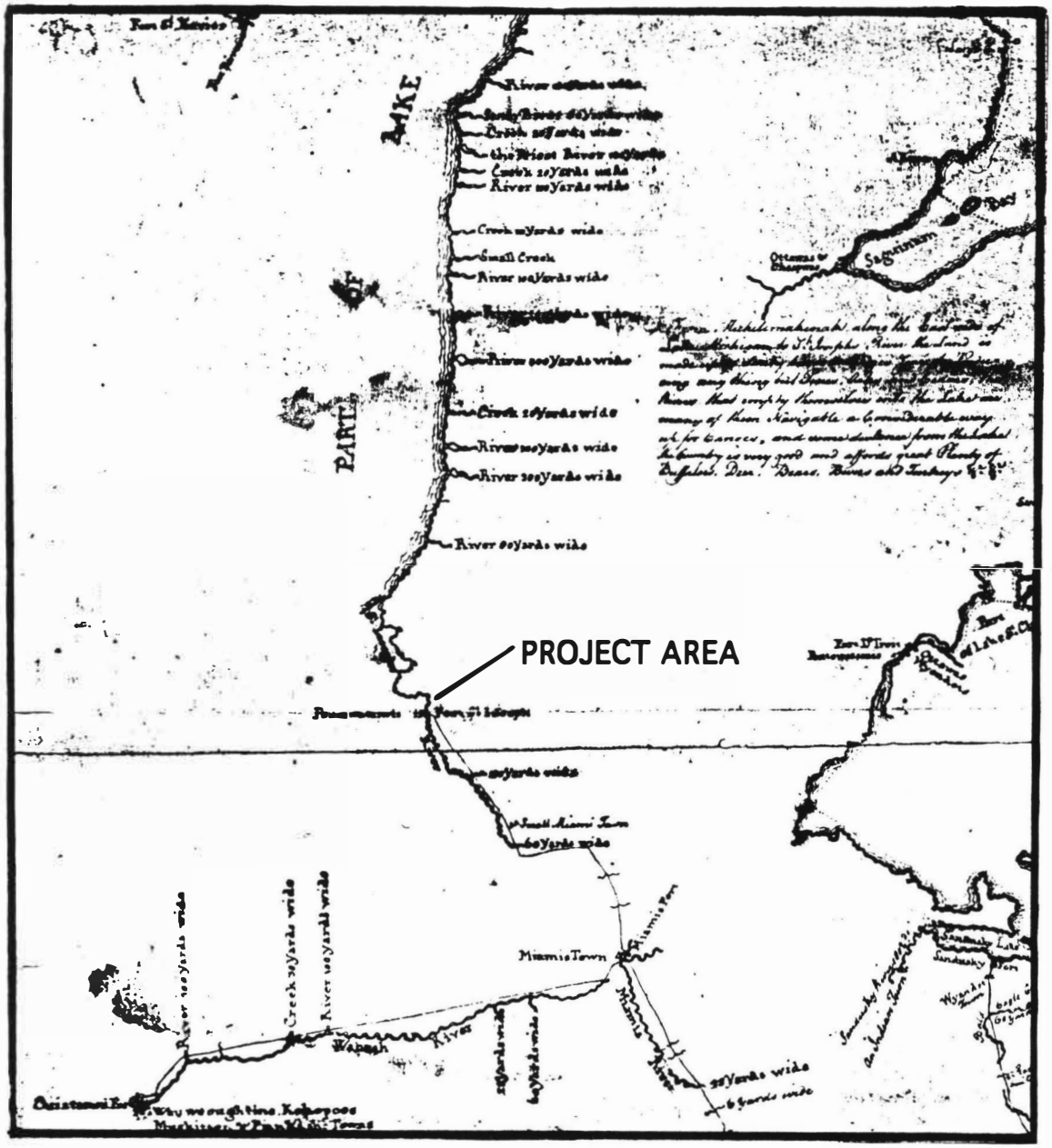

Figure 2.4. Detail of Hutchins's (1762) map of southwest Michigan.

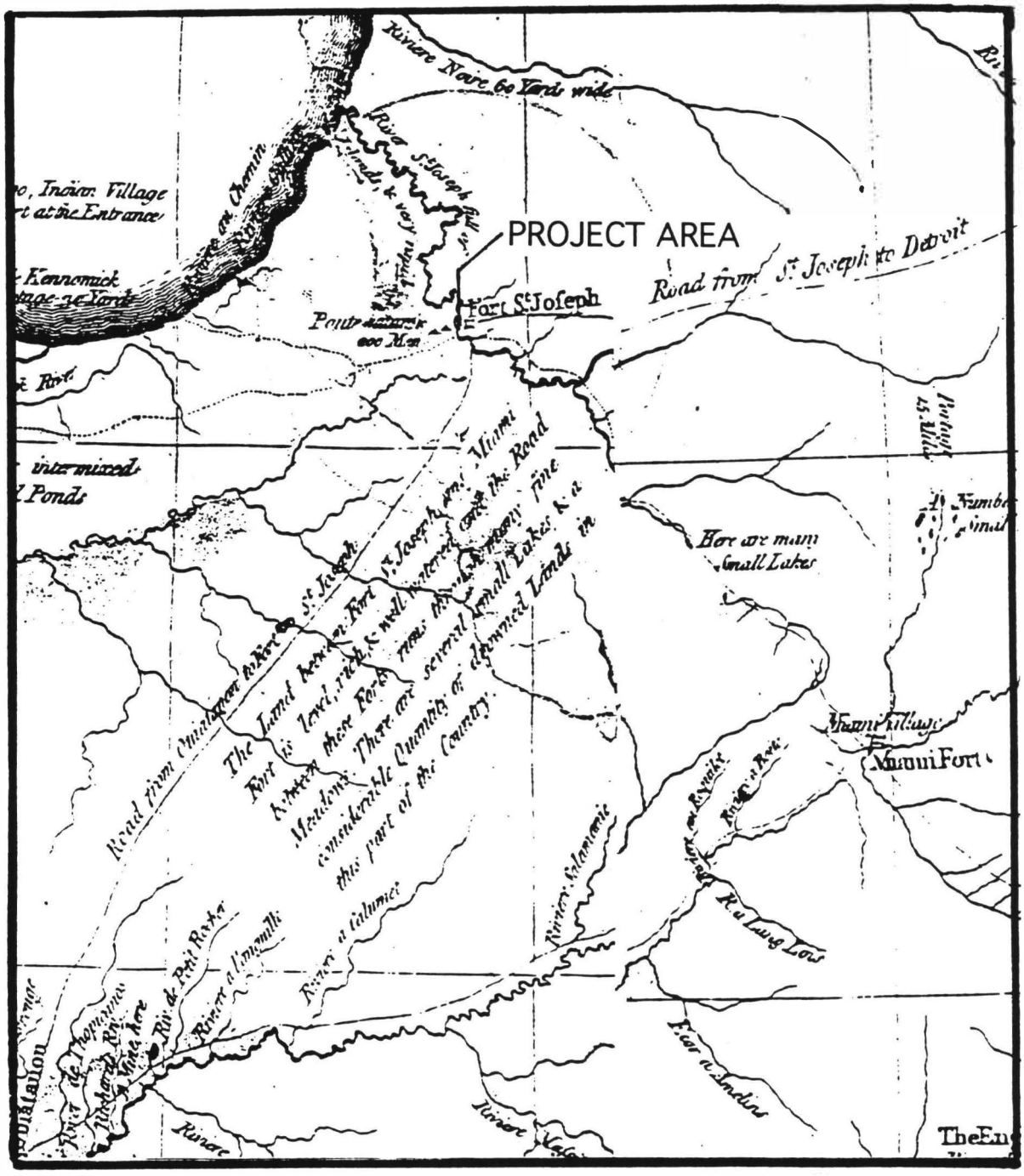

Figure 2.5. Detail of Hutchins's (1778) map of southwest Michigan.

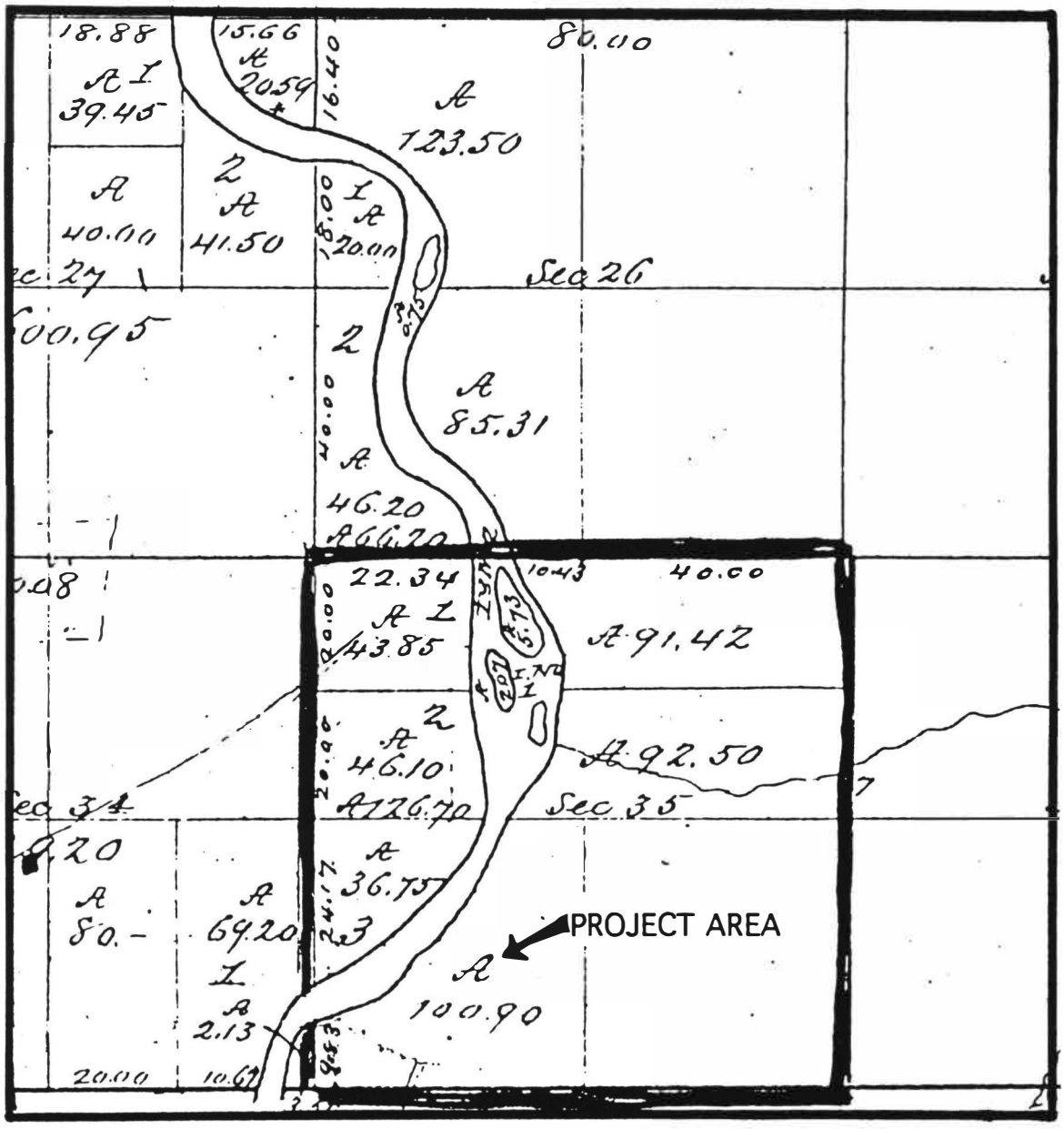

Figure 2.6. Government Land Office map of Section 35 (1827).

A traveler to Niles in 1831 described his visit to the site of the old fort as follows:

> We put up at a small and comfortable inn, and after supper strolled up the river along its banks in search of those antiquated remains of the ancient race that once was supposed to have peopled the western part of the continent. We had not rambled far before we came across the remains of an old fort, the appearance of which indicated that it was near a century and a half old. Upon the higher bank on the opposite side of the river were to be seen several mounds, apparently the burial place of our red brethren. A few rods from the fort, and higher up the bank, we found one solitary mound, surmounted with a rude cross bearing no inscription . . . The sun was just setting behind the western horizon, as we took an Indian trail and pushed for the village, reaching it in twenty minutes (Cunningham 1961:80).

This passage would certainly place the old fort (and the grave of Father Claude Allouez?) in Section 35 and near the southern limits of present-day Niles.

According to the local historian L. H. Beeson (1900), the first American resident in the Niles area, except for those affiliated with McCoy's Mission, was (E)squire Thompson, who settled on the site of Fort St. Joseph in 1823 or 1824. Where he planted his corn along the river, he frequently "plowed up many relics of the old French and English occupancy, consisting of sword blades, musket butts, flints, gun lock plates, screws and springs" (1900:185). Thereafter, area collectors, including E. H. Crane and Beeson, himself, continued to recover "thousands of articles of copper, brass, silver and iron . . . in the mold and clay of the old fort site" (1900:186). As precisely delineated by Beeson:

> The site of the village, mission, and fort of St. Joseph was on the eastern side of the river, on the first terrace up from the river, in the southwest quarter of the south-west quarter of section thirty-five (35) . . . the center of occupancy being somewhat south of the point where the north line of said S.W. 1/4 of S.W. 1/4 of Sec. 35, touches the east side of the river (1900:186).

An anonymous document (ca. 1900) entitled "Map of Location of Old Fort St. Josephs and the Miamis Village in the City of Niles, Mich.," on file at the Fort St. Joseph Museum, clearly shows the fort site (Figure 2.7). It also appears to accurately place several physiographic features, as well as a few cultural features of interest. For instance, Bloody Run flows into the river north of the site, which is situated on the floodplain below two terraces. The second terrace supported the circular earthwork mentioned in the 1827 survey as well as traces of a barn and an old farm house. Father Allouez's wooden cross appears on a bluff east of the highway to Bertrand/South Bend (Bond Street). While we cannot be certain,

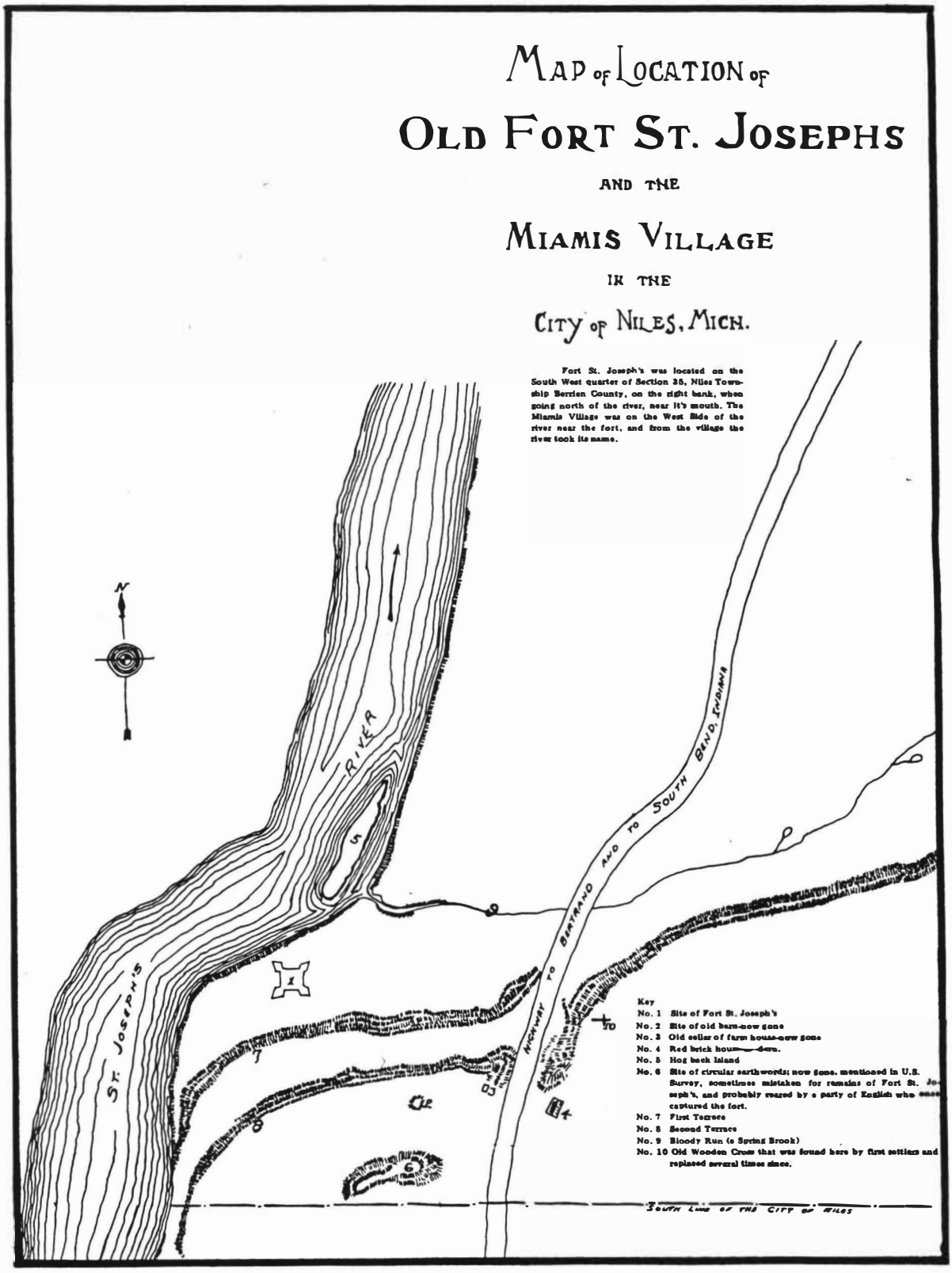

Figure 2.7. Map of the location of Fort St. Joseph (Anonymous ca. 1900).

circumstantial evidence suggests that the map is probably the work of L .H. Beeson.

The more recent record of ownership and land use for the parcel in question is more difficult to ascertain. An 1860 map of Cass, Van Buren and Berrien counties shows that G. W. Potter owned the entire SW 1/4 of Section 35 on the east side of the river (Geil, Harley and Siverd 1860). In 1865, Jacob Beeson purchased 113 acres here and built a substantial residence (and outbuildings?). Architectural remains from this period may be those represented on the ca. 1900 anonymous map that refers to the remains of an old farmstead and barn (see Figure 2.6). Jacob Beeson resided there until the Niles Water-Power Company purchased his land a year or two later (Ellis 1880:156). Under the leadership of this company's president, J. W. French, the present dam across the St. Joseph River was completed in 1876, raising the river behind the dam some 10-12 feet and possibly submerging parts of the old fort site (Bachman 1975:7; Ballard 1948:34; Ellis 1880:170).

Collecting activity still continued in earnest into the 20th century. Ballard (1973) depicted several gentlemen hunting for artifacts at the site on a Sunday afternoon in 1906. Lewis H. Beeson, a Mr. Crane, a Mr. Lombard, and W. Hillis Smith were particularly active collectors. The survivors of these and other collectors donated materials from the fort site to the Fort St. Joseph Historical Association. The materials have since become the responsibility of the Fort St. Joseph Museum. Other materials attributed to the fort at the Northern Indiana Center for History (South Bend) and the Kalamazoo Valley Public Museum may have also been collected during these turn-of-the-century outings. The Association (and later Museum) has amassed a sizable collection of "over 100,000 artifacts" from the fort site (Hulse 1977:16). These collections formed the basis of important early descriptive and comparative analyses of French colonial artifacts in the Great Lakes, particularly by Quimby (1939, 1942, 1966b; see also Hulse 1977).

For many people throughout most of the 20th century, the fort has been symbolized by a 70 ton, 12 foot boulder moved from three miles away to mark the site by the Fort St. Joseph Historical Society in 1913. A plaque is attached to the boulder, which lies in the southeast corner of the project area. As Ballard (1973) noted, the stone has been the fort for generations of school children. Collecting on the site probably came to a close about the time that the city began using the project area as a sanitary landfill, sometime in the 1930s (Lowery 1972).

Perhaps spurred by the systematic studies of Quimby, Alexis Praus, former Director of the Kalamazoo Valley Public Museum, took an active interest in locating the site of the fort about a half century ago (1948). He corresponded with personnel of the U.S.D.A. Soil Conservation Service in hopes that aerial survey information gathered by the government might assist him in discerning the presence of preserved archaeological features. In one response to his inquiry,

Soil Conservationist E.L. Froehlich indicated that "one of our Galien River District directors from Niles Township located the site of Ft. St. Joseph" on the 1937 aerial photographs.

While we cannot be certain whether Praus followed up on what he learned from Froehlich, it became imperative that we pursue this lead, inasmuch as the site area has since been impacted, at least in part, by a city landfill. The office staff of the Soil Conservation Service in Berrien Springs has provided us with copies of the aerial photographs in question, and our examination of them revealed a subtle anomaly on the riverbank corresponding with Beeson's (1900:186) precise location of the "center of occupancy" at the fort site (Figure 2.8). Fortunately, some of this area remains accessible to archaeologists today.

In the early 1970s there was another revival of interest in relocating the fort. Dr. James Bellis, an archaeologist from the University of Notre Dame, conducted some investigations in and around the project area (Ballard 1973; James Bellis, personal communication, 1998). To our knowledge, no information on this work has been published. Prior to the construction of an apartment complex east of the project area, Bellis tested the area with negative results. Bellis's investigations nearer to Allouez's commemorative stone cross (that had replaced the wooden one) identified some pig bones but no colonial artifacts. Bellis then turned his attention to the area immediately behind the Fort St. Joseph Monument where he and his field school crew cut several trenches in their search for physical evidence of the fort. None was found.

Despite this negative evidence, the Michigan Department of Natural resources recommended in 1973 that the area be developed as a future state park and on May 24, 1973, the site was determined eligible for inclusion on the National Register of Historic Places (Ballard 1973; see also Lowery 1972). These developments encouraged further planning activities over the next two years. Lyle Stone, a historical archaeologist with considerable experience at Fort Michilimackinac, conducted a preliminary inventory of the colonial artifacts from the fort in the Niles and South Bend museums (Stone 1974a). Victor Hogg (1975), who consulted for the Mackinac State Historic Parks on other projects, prepared a physical feasibility study of the development of historic Fort St. Joseph for the Greater Niles Recreation Board. He pointed out that three factors have affected the feasibility of reconstructing the fort, namely: (1) changes in river elevation; (2) city land-fill operations; and (3) transport intrusions associated with Bond Street. Finally, an engineering firm was hired to bore through the landfill in three places to ascertain the depth of the fill and the potential of the substrate to support the reconstruction of the fort within the project area (Graves 1974). All of this momentum in the community came to a grinding halt in the mid-1970s for unknown reasons. Even archaeological interest in the site seemed to begin a decline.

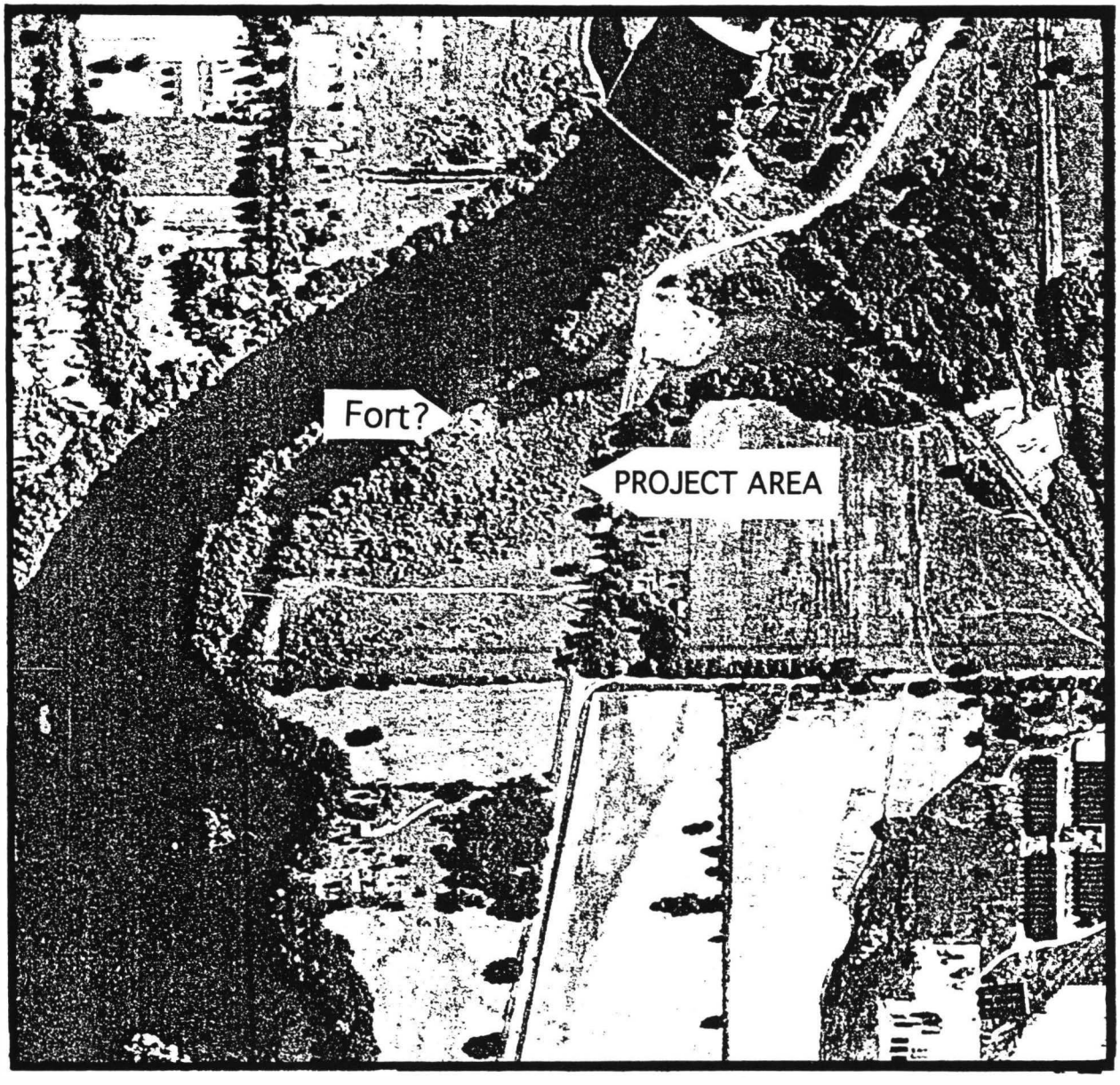

Figure 2.8. Aerial photograph of the project area (June 29, 1938).

In the early 1970s, for example, Dr. Charles Cleland, an archaeologist from Michigan State University, was also assessing the area's archaeological potential before initiating a research project on the Contact period. Cleland apparently visited the site with Bellis but conducted no formal work himself in Niles; instead he selected Fort Ouiatanon along the Wabash River in west-central Indiana as the site for several archaeological field schools during the mid-1970s. This stimulated considerable interest in the material evidence of Native American and European interaction among graduate students at Michigan State University (Martin 1986; Noble 1983 Tordoff 1983). Charles Hulse, one of Cleland's graduate students, compiled a detailed inventory of the materials at the Fort St. Joseph Museum for his M.A. thesis (Hulse 1977, 1981). This work brought further attention to the interpretive value of the collection, though no one acted upon it.

The methodological challenges that the landfill posed must have seemed daunting to engineers, developers, planners, and archaeologists alike, and efforts to relocate the fort were stopped dead in their tracks until 1992 and the formation of Support the Fort, Inc (STF). When this group began considering the idea of a reconstruction of the fort away from the land fill in the city park to the north, they received advice that led to this project. STF consulted with Dr. Donald Heldman, former Curator of Archaeology at Fort Michilimackinac, about how to proceed. Heldman emphasized the importance of historical accuracy in designing a reconstruction on the basis of information derived from archaeology and historical sources, rather than constructing mere props that looked "Colonial." He referred the group to the office of the state archaeologist where John Halsey recommended that the historical archaeologist at WMU, Michael Nassaney, be consulted to assist in conducting an archaeological survey so as to avoid disturbing any archaeological sites wherever they chose to rebuild the fort.

In initial negotiations between STF and WMU, a survey was planned for the park north of the project area that is used for the annual rendezvous sponsored by STF. Background research indicated that this area was the site of intensive industrial activities that included a millrace and several factories made possible by the construction of the dam in the 1870s (Figure 2.7). The millrace was subsequently abandoned and infilled in the 20th century. According to the state site files, this general vicinity has been designated an archaeological site (20BE357) associated with the remains of 19th century paper mills and other industrial activity (Dean Anderson, personal communication, 1997). Furthermore, evidence of colonial occupation in this area was likely to be severely disturbed.

Through further discussions, both parties agreed that a thorough and systematic search to locate remains of the fort should be conducted south of the millrace in the project area. Since mostly hand excavations would be used, it was necessary to determine the horizontal extent of the landfill where shovel testing

would prove almost useless. This would also help us to better estimate the number of test pits needed for a certain intensity of coverage. On April 2, 1998, STF employed a small crew from WMU under Nassaney's supervision to assist with a systematic mechanical coring survey to establish the southern edge of the fill. A walkover survey and field examination of 15 locations along two east-west transects in the project area allowed us to determine that the southern portion of the project area was devoid of landfill (Nassaney 1998). High water prohibited us from examining the areas below the terraces along the river. This information was used to design the survey methodology that is discussed in the next chapter.

CHAPTER 3

FIELD METHODS AND RESULTS

Michael S. Nassaney and Renee Lutes-Kurtzweil

The field component of the archaeological survey conducted in October, 1998, consisted of subsurface testing and limited geophysical prospecting predominantly in the undisturbed portions of the 15-acre project area. The objectives of the survey were to identify the locations of archaeological remains associated with a significant Colonial French and English occupation dating to the late 17th and 18th centuries. Toward this end we developed and implemented a research strategy consisting of systematic excavation of shovel test pits (STPs) and backhoe trenching. A metal detector and magnetic locator were also used to a limited extent in an area where we encountered a concentration of buried colonial artifacts. Hand excavations were avoided in the landfill which previous coring had shown to be 1.5-2.5 m deep (Graves 1974; Nassaney 1998). A backhoe was used with minimal success to cut several deep trenches through the fill in the hopes of examining the old buried ground surface.

The field work was conducted over three successive weekends for a total of 10 field days (October 10-12, 16-18, 23-26, 1998) with a paid crew and numerous volunteers affiliated with Western Michigan University and Support the Fort, Inc. Michael Nassaney visited the site each weekend in his capacity as Field Director. Renee Lutes-Kurtzweil, a WMU anthropology graduate student, served as Field Supervisor and was responsible for implementing the research design and overseeing the daily field operations. She also identified the artifacts recovered during the project and prepared the artifact inventory (see Appendix B). Christine McMillan, also a graduate student in anthropology, examined the animal bone from our excavations and provided identifications whenever possible. Hidetsugu Kosaka (WMU anthropology graduate student) and Dan Mangold (STF volunteer) operated the magnetic locator and metal detector respectively to assist in the survey. All artifacts and stratigraphic data (e.g., field notes, maps, photographs) are currently held at the Department of Anthropology, Western Michigan University. The artifacts and copies of the field notes will eventually be permanently curated at the Fort St. Joseph Museum in Niles.

SURVEY PROCEDURES

The field work began with the establishment of a base line 275 degrees east of north nearly parallel to the southern boundary of the property (Figure 3.1). A total of 27 transects were then oriented perpendicular to the base line 5 degrees east of north at 10-m intervals. These extended from just west of the Fort St. Joseph Monument (transect 1) to the edge of a steep bank about 30 m from the river (transect 27). The area immediately surrounding the monument was avoided because of the large quantities of fill that had been brought in to prepare a level, raised earthen platform for this commemorative marker. Shovel test pits (STPs) were staggered along these transects at 10 m intervals. The transects were temporarily discontinued during the initial survey when we encountered clear surficial evidence of the 20th century landfill that covers much of the northeastern portion of this 15-acre parcel. The westernmost transects extend from the base line to the river. Some of the transects further east (e.g., transects 9-11) were continued north of the fill all the way to the river's edge.

A total of 346 STPs were excavated. They measured approximately 35 cm in diameter and were dug to a depth of at least 35 cm or until sterile soil was encountered, except where artificial fill was identified. All matrix was passed through 1/4" mesh and relevant artifacts were collected and recorded by provenience. A finer mesh (1/16" window screen) was used in order to identify and recover smaller artifacts such as seed beads from some of the STPs that yielded colonial artifacts.

SURVEY RESULTS

Subsurface testing and a walkover survey of the area provided information on topography and recent historic land-use practices. For the purposes of discussion, this information can be used to divide the parcel into three strata consisting of: (1) the first and second terraces; (2) the modern landfill; and (3) the alluvial floodplain. Each stratum was investigated with varying degrees of intensity and each will be discussed in turn.

The First and Second Terraces

We excavated a total of 266 STPs on the first (lower) and second (upper) terraces in the southern portion of the project area (Figure 3.1). Historic materials identified in our collections include a range of objects associated with Native American (pre-contact?), colonial, historic, and modern activities (Figures 3.2, 3.3, 3.4). The colonial objects consist of a musket ball, a spent musket ball, a white clay pipe stem fragment, a clasp knife fragment, and a few scattered pieces of

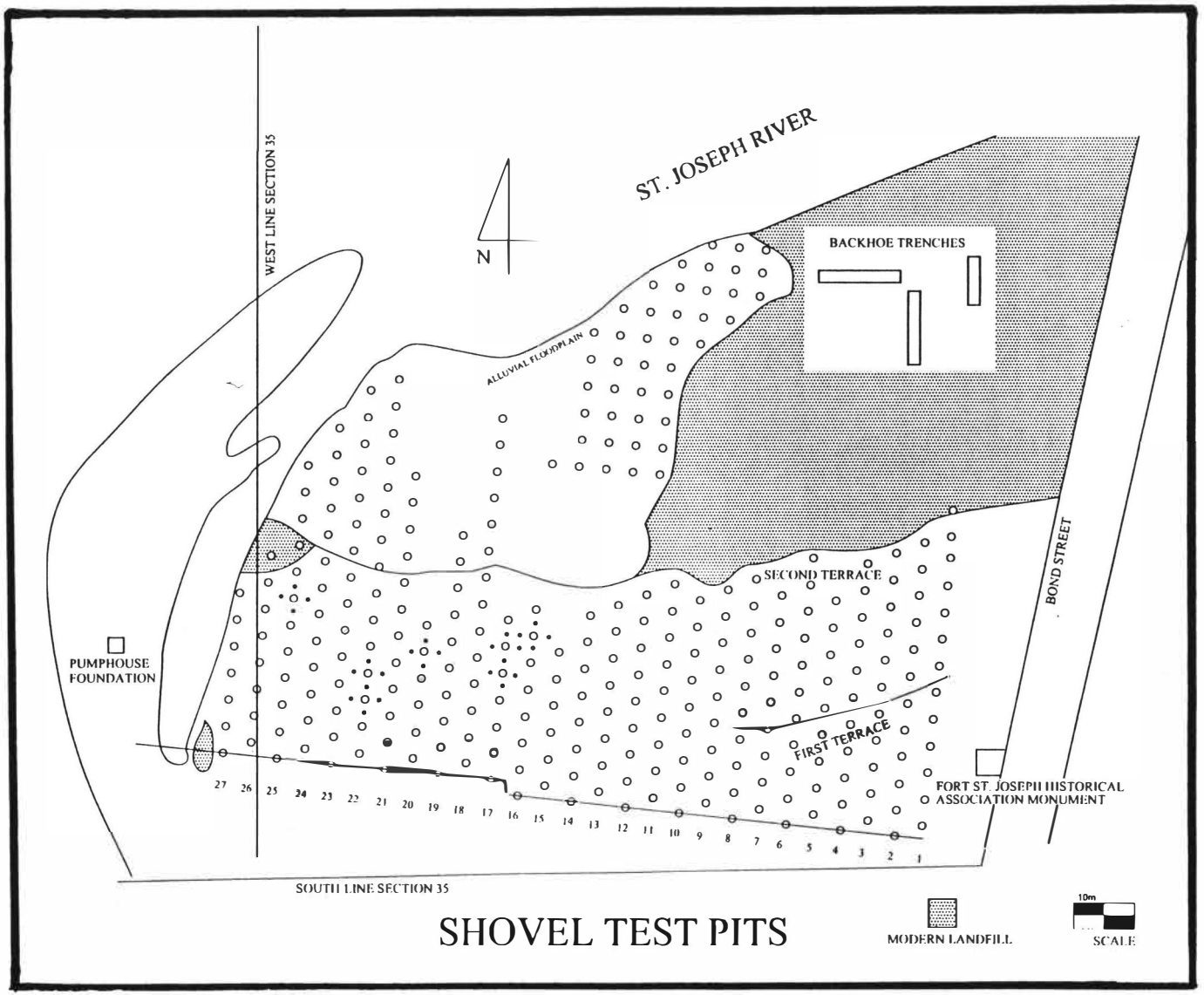

Figure 3.1. Project area showing the locations of base line, transects, shovel test pits, and backhoe trenches.

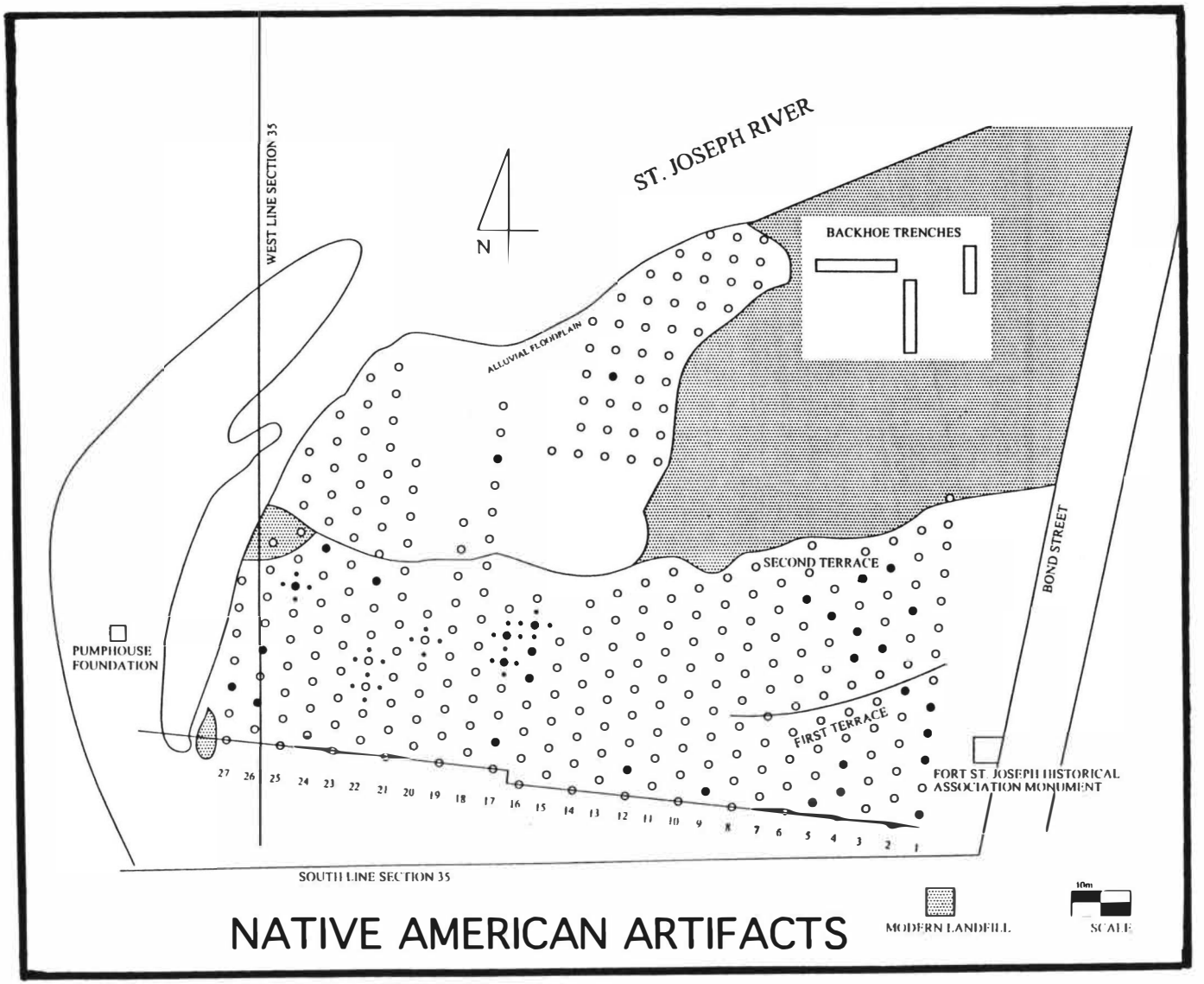

Figure 3.2. Distribution of Native American artifacts in the project area.

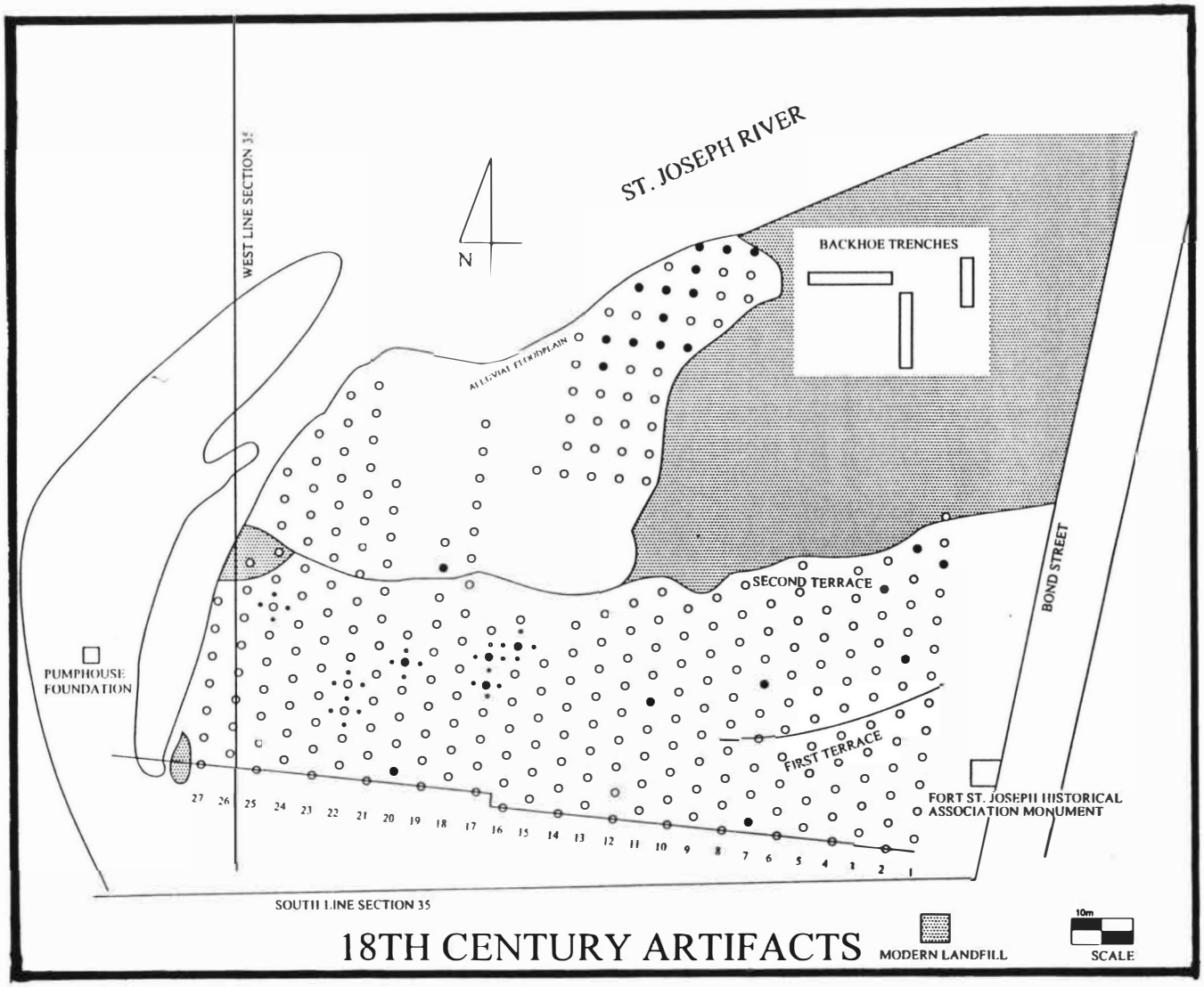

Figure 3.3. Distribution of 18th century artifacts in the project area.

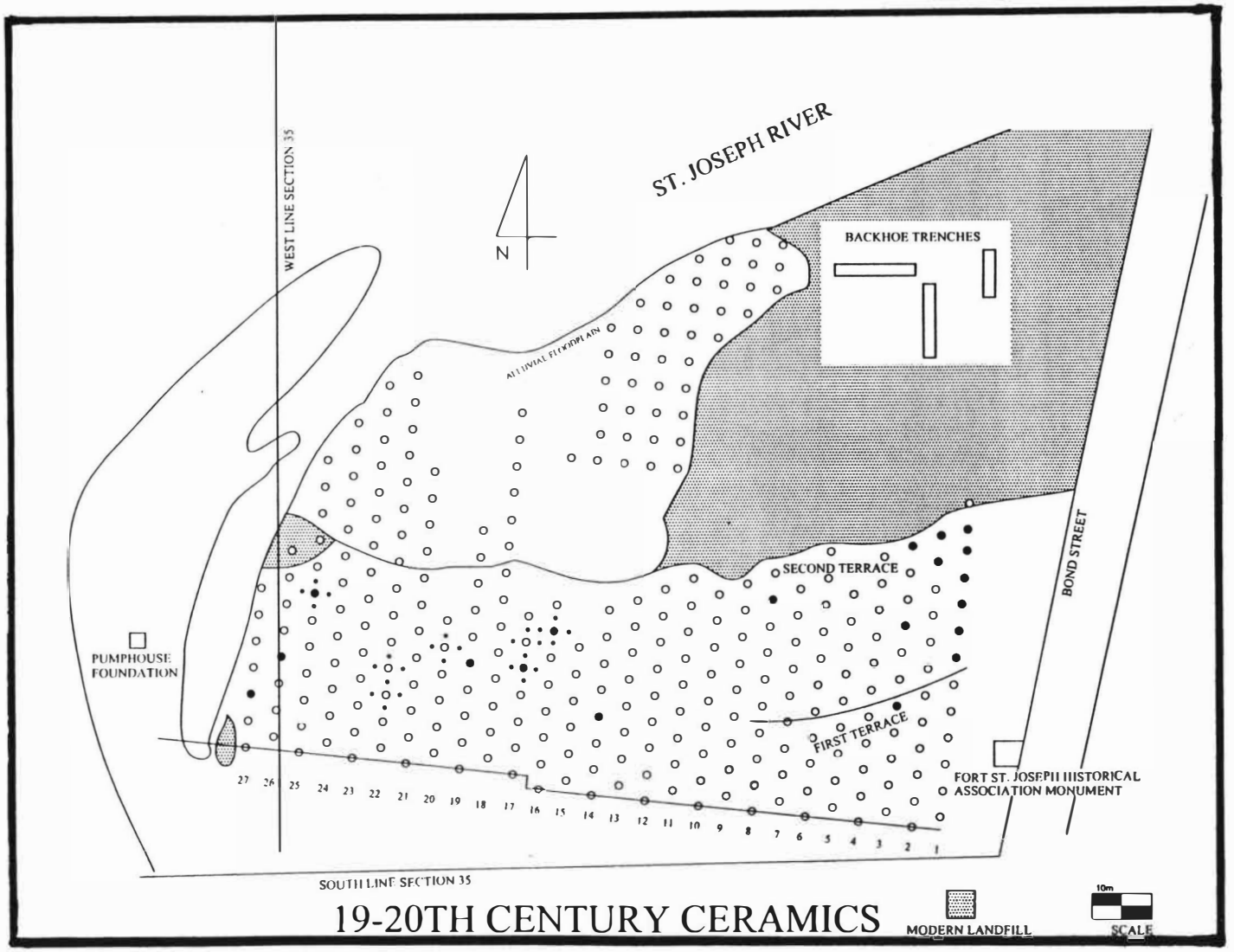

Figure 3.4. Distribution of 19-20th century ceramics in the project area.

hand blown bottle and window glass. While generally low in density, this material has significance when seen in the context of a more extensive collection of contemporaneous objects located in the floodplain that are discussed below.

We also noted several small concentrations of square cut nails, bricks, and ceramics, and a broader distribution of late 19th and 20th century objects (e.g., plastic, glass, metal) (see Figures 3.4). The historic nails, bricks, and ceramics may represent the remains of the 19th century barn that once stood on the upper terrace (see Figure 2.6). We also identified evidence of a compacted soil zone in several test pits which corresponds with a field road that appears on several maps and aerial photographs. The field road extended from Bertrand Road (currently Bond Street) towards the river and may have provided residents of the old farmhouse access to the barn and the river. No evidence of the farmhouse was identified, nor did we encounter definitive architectural remains of the barn. The house may have been located closer to the road than we tested.

A number of STPs yielded evidence of Native American activity (Figure 3.2). This consisted of over 50 pieces of chert chipping debris (flakes and shatter), 2 projectile points, and three shell-tempered potsherds, one of which is cordmarked. These finds were investigated with 21 additional STPs which yielded further archaeological evidence, including a sandstone, Micmac-style pipe bowl which is more fully described in Chapter 4. This artifact type almost certainly dates to the 18th century, though by both Native Americans and Europeans apparently used it (cf. Trubowitz 1992). There were no discrete concentrations of materials noted and no indications of subsurface features. Although the density of Native artifacts in this stratum of the project area is quite low, the broad areal extent of the artifact scatter suggests that these terraces were used regularly by Native groups in the past. While the precise age of the occupation(s) is difficult to determine, the presence of shell-tempered pottery, a Late Woodland style projectile point, and a Micmac pipe are consistent with Native American material culture possibly in use into the 18th century. Some of these objects may have been deposited by either the Miami or Potawatomi groups who were attracted to this locality by the French or English during the Colonial Era.

On the basis of these artifacts, along with the presence of admittedly limited colonial and other significant historical materials, this stratum exhibits moderate archaeological sensitivity. Further testing may help to identify the vertical and horizontal extent and nature of the Native American and colonial activities here and determine their relationship to the fort complex. Finally, it should be noted that little effort was made to examine or evaluate the 19th century remains on the site or assess their National Register eligibility.

The Modern Landfill

Close attention to topography during casual walkover survey, systematic mechanical coring, and the excavation of STPs helped to delineate the extent of the recent land fill in the project area. Since there is the possibility that remains of the fort lie buried beneath the fill, a backhoe was used on Friday, October 23 to excavate 3 deep trenches through the landfill to expose any underlying undisturbed deposits (Figure 3.1). The trenches were confined to a limited segment of the project area based on the anonymous ca. 1900 map, the nearby presence of colonial artifacts, and accessibility. The backhoe was brought into the project area from the north near the boat ramp along the treeless corridor. At the southern edge of this cleared area, the operator was able to enter the woods by felling a few small trees to position his backhoe bucket within 4.7 m of the edge of the fill. Excavation of Trench 1 began at this location and extended for a distance of 26.5 m to the east. Trench 2 was placed perpendicular to the first trench along a north-south axis about 5 m to the east. This trench was dug discontinuously for a distance of 23 m. Finally, Trench 3 was dug parallel to Trench 2 about 22 m further east. It began about 15 m from the river and extended 15 m to the south.

While we observed different fill episodes within and between each trench, we consistently encountered water at about 90-100 cm below the modern ground surface in all of the trenches making it extremely difficult to observe the stratigraphy and the contact between the fill and the undisturbed underlying sediments. However, in Trenches 1 and 3 we were able to identify an undisturbed gray (Shoals?) silt loam layer beneath the fill at a depth of approximately 1.5-2 m. These alluvial deposits were separated from the fill by a layer of organic sediment (ca. 20 cm). It appeared that the organic layer had been naturally deposited under very wet conditions. This suggests that the fill in this location may have been used to raise the low lying area immediately adjacent to the river, perhaps where Bloody Run had once flowed into the river (see Figure 2.6). A similar wetland area also appears on a 1927 topographic map of the site (Figure 3.5). It is also notable that the soil sequence beneath the fill was similar to that later observed in the floodplain to the west where excavations revealed colonial artifacts. While there is the possibility that cultural remains are associated with these gray sediments beneath the fill, we were unable to systematically examine enough of the sediments to make a determination due to the elevation of the water table. The high water also made it difficult to produce detailed, scaled drawings, although we were able to observe the sediments as they were being excavated and note their similarity to soils in the alluvial floodplain.

No systematic attempts were made to sample the contents of the landfill. Numerous glass jars and bottles were noted in Trenches 1 and 2, whereas Trench 3 cut through large quantities of bricks and other construction debris. This

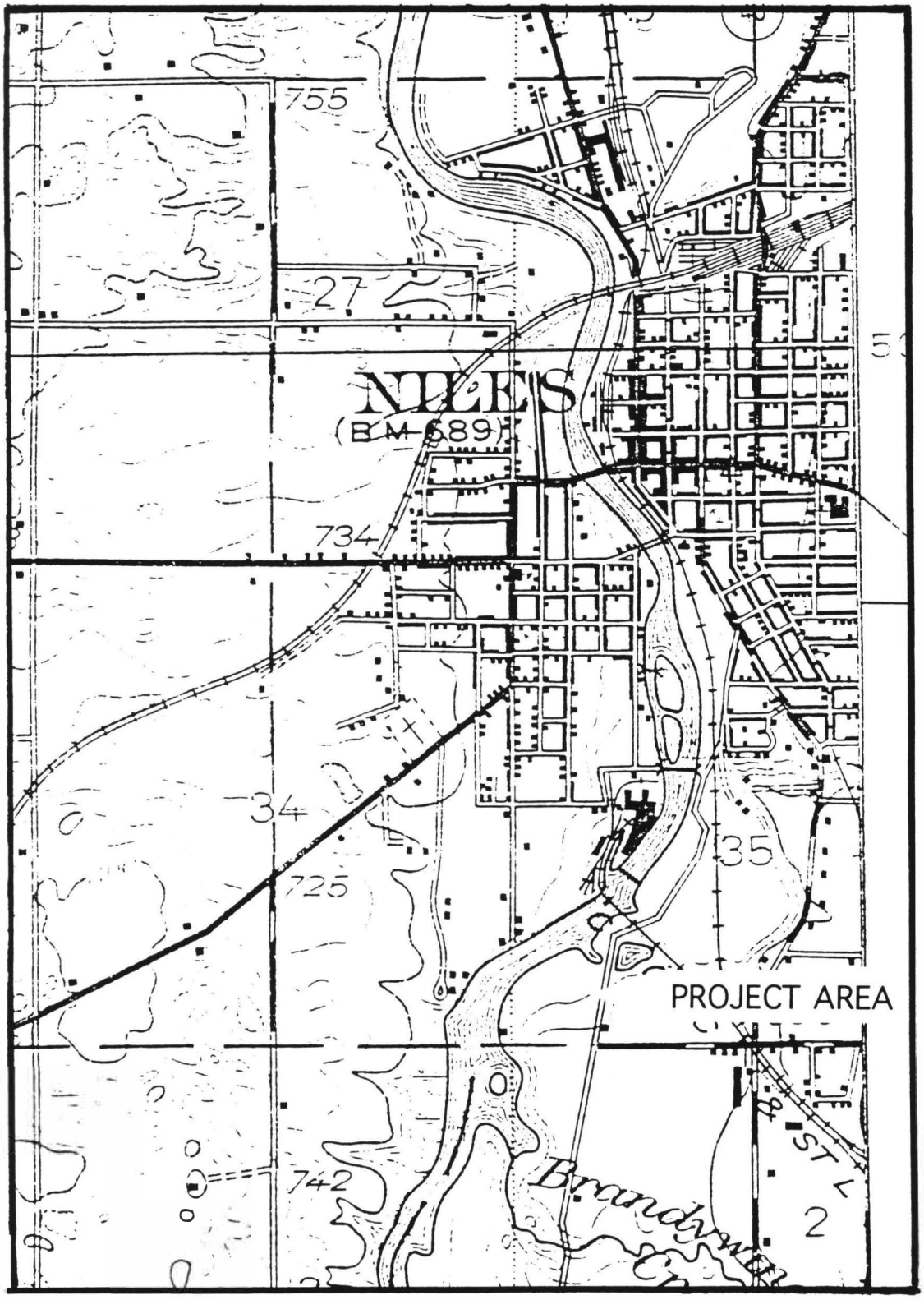

Figure 3.5. Topographic map of the project area (USGS 1927).

prompted one observer to suggest that the fill in Trench 3 derived from the demolition of a nearby factory. Given the absence of trees in the area of Trench 3, it would appear that the construction debris was deposited later (ca. 1960s?) than the fill that was comprised of predominantly domestic artifacts further south which likely pre-date the 1950s. A time-transgressive south to north use of the landfill would explain this pattern. The Trench 3 area appears to be a low lying wetland on the 1937 aerial photograph, providing a terminus post quem for the landfill in this location.

In sum, the backhoe excavations failed to recover any evidence of colonial occupation beneath the fill in this area of the site. However, given the high water table conditions that we encountered and our limited testing, we cannot rule out the possibility that relatively undisturbed remains of the fort exist beneath the 1.5-2 m (4-6 feet) of fill in this vicinity of the site. Further trenching here and further to the southwest may prove to be profitable when the water table is lower so that the old ground surface and underlying sediments can be examined more carefully.

The Alluvial Floodplain

As we extended our STP transects to the north, particularly west of Transect 17, it became apparent that there was a considerable portion of the project area along the river below the first terrace that was not covered with deep deposits of artificial fill. Thus, we were able to establish 15 STPs along Transect 22 (Figure 3.1). We were also able to continue Transects 7-15 north of the fill and excavate several STPs along each transect between the landfill and the edge of the river

At the time of our survey, the height of the river was less than one meter below the elevation of the floodplain. Some areas exhibited standing water, such as near the edge of the landfill at N200 W90. We began testing the floodplain along the northern end of the westernmost Transects (22-25) where there was little evidence of dumping. As this work was progressing with mostly negative results, we were approached by a local amateur collector, Tom Kelley, who had used a metal detector to identify and recover a collection of artifacts earlier in the season (June) when the river level was 8-10" (20-25 cm) lower. Most of the objects that he collected dated to the 18th century and were probably associated with Fort St. Joseph. We had also identified two possible Colonial artifacts—a knife blade fragment and a piece of worked bone—in this vicinity of the site on the surface during a casual walkover in September. According to Kelley (personal communication, 1998), the objects he identified with his metal detector were located in gray sand (silty loam?) about 6-10 inches beneath a layer of river muck. The objects he recovered and later donated to the project included musket balls, gun parts (e.g., butt plates, trigger guards, flints), clasp knife blades, cuff

links, thimbles, and copper kettle lugs and scrap. These materials have been catalogued (98-3-0) and are described in more detail in Chapter 4.

To assist in confirming the location of Kelley's finds and to identify other possible metal and related objects in situ, we conducted an expedient magnetic survey using a metal detector and a magnetic locator (Model GA-72CV) in the area of the floodplain between transects 7 and 15. (Kelley reported that his materials came from the vicinity of transects 8 and 9, more than 230 m from our base line.) Our survey identified a number of metal objects on the ground surface in close proximity to the riverbank. Most of these artifacts, predominantly scrap metal, appear to be associated with the colonial occupation. We later learned that Kelley had discarded some of his finds along the riverbank. We tested the locations of magnetic anomalies not associated with surface finds using 5 STPs. All of the objects identified in these pits were confined to the upper 10-20 cm of the soil profile in a dark organic matrix likely formed in inundated areas over the past few decades. They appear to be modern in origin.

In addition to testing the locations of magnetic signals, we also extended our grid into this area of the inundated floodplain to provide more systematic coverage and to recover diagnostic materials in undisturbed, subsurface context. A total of 81 STPs were excavated in the floodplain stratum (Figure 3.1). All but three were located along transects at 10 m intervals and nearly half (36) of these units were placed along Transects 8-15. The soil stratigraphy here consisted of a layer of dark partially-decayed organic matrix (ca. 0-20 cm) underlain by gray silt loam sediments. The sequence was similar to that observed beneath the landfill in Trench 1 immediately to the north.

A varied assemblage of colonial artifacts was observed and recovered from 14 different STPs (Figure 3.3). These objects complement and expand the collection made by Kelley. Diagnostic artifacts included several gun flints or spalls, a trigger guard finial, a small knife blade, numerous pieces of lead sprue; 19 seed beads; a yellow, lead-glazed ceramic mug handle; miscellaneous metal including square hand-wrought nails and brass kettle fragments; a clay pipe stem; fragments of window and bottle glass; and a significant quantity of well-preserved animal bones that likely represent the remains of colonial meals. The assemblage is described in more detail in chapter 4. Architectural evidence was also identified. This included several types of bonding materials resembling pierrotage and chinking. A number of stones with bonding material adhering to them were also observed. These may have been components of walls, hearths, or chimneys associated with habitation structures in the fort.

Due to the high level of the water table, it was difficult to observe features or other evidence of cultural stratigraphy. While the colonial artifacts were recovered from an apparent depth of ca. 25-110 cm, their vertical provenience may be more limited. We could have determined this had we been able to maintain better spatial control. The height of the water table precluded us from

establishing provenience with any acceptable degree of precision. These conditions constitute serious challenges to future investigations, though they are not insurmountable.

In sum, archaeological remains associated with Native American, colonial, historic, and modern land use in the project area were detected in our survey. *The most significant remains for the purposes of this study are the buried colonial deposits found on the floodplain in a relatively confined area. The materials, which constitute unequivocal evidence of 18th century French and English activity, likely represent cultural deposits associated with Fort St. Joseph.* In addition to the artifacts, there is also significant evidence of architectural debris in the form of stones, pierrotage, and chinking. The materials appear to be relatively undisturbed and are buried by at least 15-20 cm of organic debris and river sediment. This concentration of colonial objects is bounded by the river to the northwest and the landfill to the east and southeast. Thus, its maximum horizontal extent remains unknown. Nevertheless, this deposit is highly significant and it should be evaluated further to assess its integrity.

CHAPTER 4

MATERIAL ANALYSIS

Renee Lutes-Kurtzweil, Christine McMillan, and Michael S. Nassaney

ARTIFACT CLASSIFICATION

The purpose of recovering and analyzing objects in the field of historical archaeology is to be able to infer the behaviors and actions of the occupants responsible for making, using, and discarding these materials. Material culture analysts usually rely on the form of an object to infer its function. Indeed, often objects have analogs in the contemporary world (e.g., beads, buckles, knives) or can be identified through comparisons with specimens known through documents or in extant collections (e.g., gun flints, tinkling cones). In addition to their formal and functional attributes, material objects are often also useful chronological markers. Thus, by examining objects in their spatial and temporal context, we can begin to infer aspects of past human lifeways, as well as how the artifacts served to create and reproduce the social conditions of their makers, owners, users, and viewers.

There is no single classification system that archaeologists agree upon to organize and describe formal and functional variation in historic artifacts. However, many archaeologists find it useful to distinguish artifacts by broad functional category with the understanding that varying proportions of functional types will reflect differences in site function. For example, a predominantly domestic site is likely to have a larger proportion of household-related objects than would be found on a battlefield or at a hunting camp. For the purposes of this analysis, we have grouped the artifacts into 4 broad functional categories: personal, household, occupational, and structural. These categories will help us to infer some of the activities of the occupants and serve to facilitate comparison with other contemporaneous sites.

We also recovered a significant quantity of animal bones, which probably represent the remains of subsistence activities related to butchering, consumption, and deposition. These remains, or ecofacts as they are often called, are also discussed in this chapter. Identification and analysis of faunal remains can provide important information that complements the inferences derived from other artifact classes.

Personal

This category includes objects related to dress and adornment, grooming and personal hygiene, and recreation.

Dress and adornment. A number of different objects can be assigned to this category including items of dress, such as buckles, buttons, and cuff links in addition to items used for body adornment such as rings and hair pipes.

Two buckles were identified in our collection (Figure 4.1). One is a cast brass shoe buckle (98-3-0) with a rectangular frame; the hook and tongue elements are missing. Decoration consists of simple vertical incised lines. The buckle is similar to ones found at Fort Michilimackinac (CAT1, SA, T2, Va), suggesting that it may date to the first half of the 18th century (Stone 1974b:35).

The other is a pewter belt buckle (98-3-0) identified as a D-shaped buckle with a hinge bar conforming to a variety (CII, SA, T1) designated by Stone (1974b:34). The hook bar is integral to the buckle frame in this type. The buckle has a cast pewter frame with a hinge element between the buckle sides, and both the tongue and strap were attached to the center bar. Similar buckles have been identified at Fort Michilimackinac, Fort Livonia, and Valley Forge, Pennsylvania, in Revolutionary War-period temporal context (see Klinger and Wilder 1967:20).

Two buttons were identified in the collection, only one of which appears to be associated with the colonial period (Figure 4.2). That specimen is a plain three part silver-gilt button (98-3-183). It was produced from a low-grade brass or copper base with silver gilt, much of which has eroded away. The crown and back comprise a single element separated by a hollow space joined by brazing the parts together. The wide strap shank or eye is soldered to the back separately similar to a variety from Fort Michilimackinac (CII, SB, T1, Va; see Stone 1974b:53). This button is almost certainly of 18th century origin, having been found in a mid-18th century context at Fort Michilimackinac.

The second button was identified as a plastic machine-made specimen with two holes for attachment (98-3-64). It is probably associated with the mid-20th century dumping activities at the site.

A well-preserved set of small cuff links (98-3-0) would have been used for fastening a shirt cuff (Figure 4.3). This pair in the collection is made from cast brass with identical front and back pieces attached by a single brass wire link. They are circular with a cast design of double hearts beneath a crown and a cross. This design is a known symbol of the unity of Jesuit religious faith and the authority of the French monarchy (Larry Young, personal communication, 1998).

Several objects from the collection are associated with clothing production and maintenance. For example, both Native Americans and Europeans used

Figure 4.1. Buckles. Left: "D"-shaped pewter belt buckle (98-3-0); right: rectangular cast brass shoe buckle (98-3-0).

Figure 4.2. Dress, adornment and personal care. Clockwise (from top left): iron awl with off-set handle attachment; silver gilt button with flat shank; brass tinkling cone; bone comb (most teeth missing); plain brass ring.

Figure 4.3. Lead bale seal (left) and pair of cuff links (right).

awls to produce clothing, bags, and leggings. Awls were employed to pierce holes in the leather to facilitate sewing. An awl fragment in our collection (98-3-0) is likely an 18th century specimen (Figure 4.2). The fragment consists of an iron shaft measuring 68.3 mm in length with a square cross-section similar to a type (T1, Va) described by Stone (1974b:155-156). This type is characterized by a square cross section and an off set shaft that served to seat the awl in a bone or antler handle.

A fragment of a pair of scissors (98-3-15) was recovered from STP 13 along Transect 1 (STP 13.1). It dates to the 20th century and was found in association with numerous modern artifacts thereby delineating the extent of the landfill in this area of the parcel.

Another object often associated with clothing production or decorative embroidery is the thimble. Thimbles have also been found in Native contexts where they were perforated for use as earrings and/or as decorative clothing elements. Because neither of the two thimbles found during this survey exhibit any perforations, we think that they were used for the purpose of sewing (Figure 4.4). One of the thimbles in our collection (98-3-0) is complete. It is constructed from solid brass and is round, with tapered sides, and a convex top. It measures 1.38 cm in diameter. A two-part construction is suggested by the round impressions diagonally placed on the sides from the top to the base of the rim. The convex top is impressed with diamond patterning and is brazed to the body of the thimble. It is nearly identical to a specimen from the Trudeau site in Louisiana that dates to the 1740s (Brain 1979:188).

A second thimble is a fragmentary iron specimen (98-3-0) represented by only the top and a tiny bit of the body. Its iron construction was presumably for added strength; it has similar impressions as the brass thimble. This specimen has horizontally placed round impressions on the side and diamond impressions on the top. No measurement is provided due to its fragmentary condition.

Many European goods available to Native peoples through exchange were used as a means of adornment. Items such as beads and tinkling cones were decorative elements par excellence as well as classic trade goods. Glass beads were long produced throughout Europe to be exchanged for furs and other goods on the frontier. Because of their cheapness, beads are ubiquitous objects at Contact period sites throughout eastern North America. They may be underrepresented, however, at archaeological sites that were investigated without the aid of fine mesh to capture these small artifacts. All of the beads in our collection were recovered using 1/16" mesh.

A total of 19 beads were recovered from six locations on the floodplain within 30 m of the riverbank. These beads are grouped into two classes: hollow cane method/drawn and mandrel-wound beads (see Brain 1979:96-98; Stone 1974b:88). Only one white hollow cane bead (98-3-185) is represented in this

Figure 4.4. Household objects. Top (from left to right): brass porringer; kettle rim lug; cast brass kettle lug with "2" stamped on reverse; bottom: thimbles.

collection (Figure 4.5). This bead type is formed by blowing air into a mass of molten glass and then drawing the glass into a long hollow tube. When it is cooled the beads are broken from the long tube into the desired lengths. To create a smooth surface the beads are tumbled in a mixture of sand and ash.

The remaining beads in the collection include 18 of the mandrel-wound type (98-3-178, 98-3-181, 98-3-185, 98-3-190, 98-3-191, 98-3-211). Of these, 16 are white, one is purple, and one is black (Figure 4.5). These beads are produced through a process similar to that of the cane beads, but without the air blown to create a tube. This thin fiber of glass is then broken into small segments, reheated and wound around an iron or copper rod. When the beads are cool they are removed and then tumbled as are the cane. At contemporaneous sites white is consistently the most common color found.

Another popular artifact on the frontier were tinkling cones which were used by Native Americans, European fur traders, and their Metis offspring as a decorative element on clothing, leggings, bags, and pouches. Tinkling cones are cut from small trapezoidal pieces of brass that are then rolled into a cone-shaped object. Attachment is simply made by crimping the cone around a thin strip of leather and further decorated with dyed horse or deer hair extending from the bottom. One brass tinkling cone was found among the artifacts recovered by Kelley from the river's edge (Figure 4.2). It measures 2.4 cm in length, well within the size range of specimens from Fort Michilimackinac which have a mean of 2.55 cm (Stone 1974b:131).

Another type of adornment used by the Potawatomi was the hair pipe. They were used to insert strands of hair through the pipe after which a cord knot was tied at the distal end to secure the pipe to the hair (Quimby 1966b: 29). A single cylindrical tube of sheet copper (98-3-0) identified as a hair pipe has been added to the eleven specimens in the Fort St. Joseph Museum documented by Hulse (1977:256). Measuring 7.45 cm in length (1.2 cm dia.), it is very close to the mean size of the others found at the site (7.07 cm) (Hulse 1977:256). A second possible hair pipe (98-3-158) was found on the surface, probably tossed up by Kelley during his uncontrolled excavations. This piece measures 2.75 cm in length.

Finger rings, often of brass, are common artifacts on French colonial sites (Cleland 1972). So-called "Jesuit" rings displayed religious symbolism and were "assumed to be religious tokens handed out by Jesuit missionaries to Christian converts" (Brain 1979:192). Brain (1979:192) argues that such an assumption has no factual basis; rather, rings were merely simple trade items. A single brass ring (98-3-0) was identified in our collection (Figure 4.2). This plain, undecorated specimen is heavily corroded and measures size 8 (0.8" diameter). The large size of the ring and its plainness suggest that it was not intended for use in the fur trade but was a personal possession of a man, quite possibly a wedding ring.

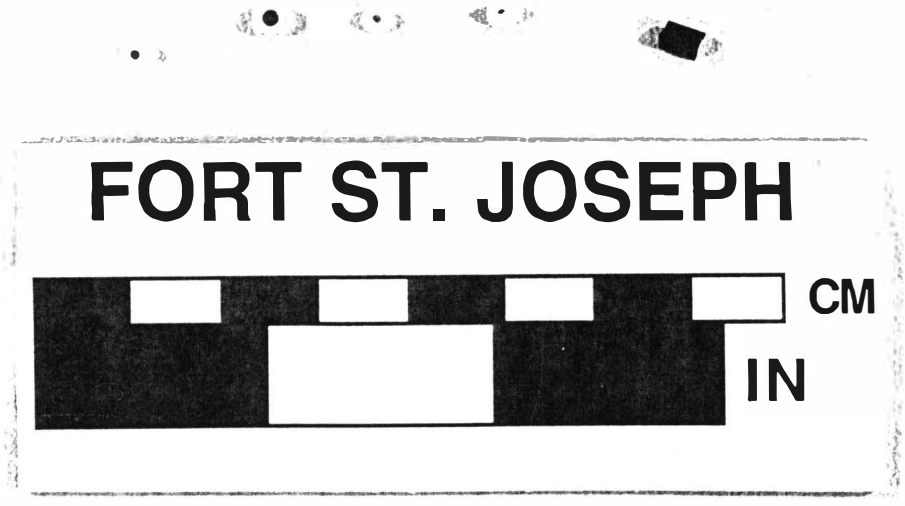

Figure 4.5. Beads. All of the white beads are mandrel wound glass; the black one on the far right is drawn glass.

Grooming and Personal Hygiene. Grooming-related objects are confined to a single bone comb fragment (98-3-0) and a plastic hair fastener (98-3-9). The comb consists of a plain body with the teeth broken off (Figure 4.2). It is typical of those found at other 18th century sites, such as Fort Michilimackinac (Stone 1974b:139, 141). This type of comb may have been used to remove lice from one's hair.

The hair fastener appears to date to the 20th century and may have been introduced through recent dumping activities.

Recreational Objects. While various forms of material culture are often associated with recreational activities, only pipes and toys in the collection are assigned to this category. Five pipe fragments were recovered representing both Native and European forms. By the 18th century, pipes were probably used most often to smoke tobacco. Tobacco is a New World product which indigenous peoples have used for social and religious purposes for many centuries throughout the Americas (see Asch and Asch 1985; Nassaney 1999). It was most commonly consumed by smoking, though it was burned for ritual offerings and used in other ways as well. A distinctive style of smoking paraphernalia known as the Micmac pipe appeared in the lower Great Lakes region around the time of Contact. The style was named after the Micmac Indians, an Algonquian group in the Canadian Maritime Provinces, who were using this form when first observed by Europeans in the 16th and 17th centuries (Hauser 1983:13). Micmac pipes are reed-stemmed pipes that are characterized by a round or multi-sided bowl shape (Hulse 1977). The body narrows sharply at the neck and widens at the base, often with a drilled hole through which a cord and ornaments can be attached (Hulse 1977:354). Many pipe bowls are decorated with carved geometric patterns. During this survey three such pipe bowl fragments were found in various stages of manufacture (Figure 4.6). These compare favorably with the 70 or so pipe bowls that were recovered during uncontrolled collections from the vicinity of Fort St. Joseph at the turn of the century.

Micmac pipes were produced from very fine limestone, catlinite, and sandstone and are commonly found at contemporaneous sites in the region such as Michilimackinac, Ouiatanon, Fletcher, and Guebert (Brown 1973; Hauser 1983:28; Mainfort 1979; Morand 1994:48-50; Trubowitz 1992). According to several observers, these pipes were not confined to native use in the 18th century as both Canadians and Euroamericans had acquired this distinctive artifact (e.g., Kalm 1987:498).

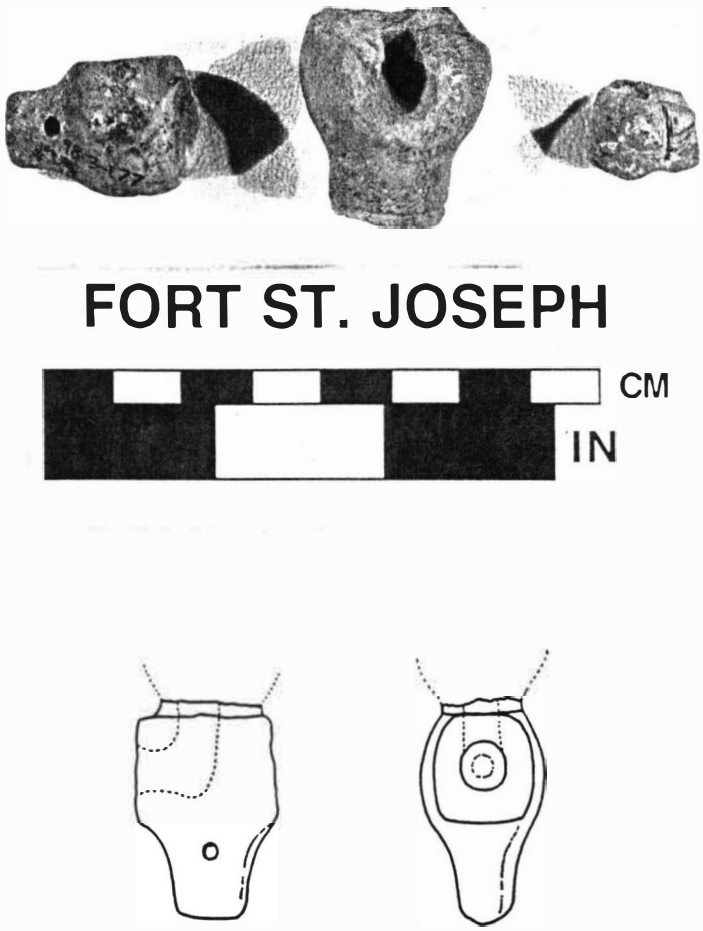

Figure 4.6. Micmac-style stone smoking pipes. The specimens on the far left and far right are made of fine-grained limestone. The one in the middle is made of a local sandstone which broke during manufacture.

One of the pipes in the collection is a finished specimen exhibiting carved and circular designs on two sides of the bowl (Figure 4.6). The bowl is fine-grained light gray limestone and was broken during use (98-3-202). A second pipe (98-3-177) is made of similar raw material, although it lacks decoration. This specimen was broken in the final stages of production when a hole was being drilled in the heel of the bowl. The third example (98-3-165) is a pipe bowl carved from local yellow-brown sandstone. This specimen is very crude, being much larger in size than the other two. This pipe was broken in an early stage of production when the bore hole was being drilled. In addition, a fragment of fine-grained gray limestone (98-3-181) was recovered from STP 12.20 and is similar to that used in the production of the Micmac pipes described above.

As Europeans quickly adopted tobacco use, they reciprocated by producing inexpensive white clay pipes that appear in historic sites throughout North America. Two European-manufactured pipe stem fragments (98-3-69, 98-3-188) from the survey represent this artifact class. A plain specimen was recovered from STP 11.18 that also yielded other colonial artifacts. The other was found on the first terrace in STP 7.1 and has a yellow lead glaze at the tip. This glaze is typical of late 18th century manufacturing techniques. The age estimates for the specimens are supported by their bore diameters (9/64 and 11/64 inch) which fall within the expected size range for pipe stems in the latter half of the 18th century (see Binford 1962; Harrington 1978).

Other recreational objects include marbles and modern children's toys. The toys consist of a black plastic truck tire (98-3-24) and an unidentified yellow plastic construction toy fragment (98-3-10). Two modern glass marbles were found in STP 1.13 (98-3-15) and STP 3.11 (98-3-32), on the edge of the modern landfill.

Household

This functional category consists of objects associated with household activities such as food preparation, food consumption, and furnishings.

Food-related. Various objects directly implicated in the preparation and consumption of food include ceramics, glass containers, cutlery, and brass or copper kettles and other utensils. The ceramic assemblage recovered during the project consists of a total of 44 sherds. They are discussed in chronological order from the pre-Contact period through the present.

Three small sherds of low-fired earthenware ceramics likely produced by local Native Americans were recovered from the first terrace of the project area (98-3-42, 98-3-45, 98-3-144). Two of these buff-colored shell-tempered sherds are plain, whereas one (98-3-45) has cord marking. Vessel size or shape is

indeterminable due to the small size of the sherds. While these sherds are too fragmentary to make any definitive chronological assignments, they are not inconsistent with pottery produced by Native peoples from the late Late Woodland period into the Contact Era (ca. A. D. 1000-1800).

A small sample of 18th century ceramics (n=9) was recovered from the floodplain near the river in association with other Colonial objects (Figure 4.7). They are classified according to paste, surface treatment, and decoration. Among the collection are 3 pieces of blue and white buff paste tin glazed earthenware (98-3-0, 98-3-178). These include a fragmentary rim of a shallow utilitarian bowl (ca. 30 cm in diameter) and two body fragments too small to determine vessel size or shape. These pieces are probably English in origin and were produced from the late 17th through the end of the 18th century (Miller and Stone 1970).

Another type of distinctive earthenware recovered from the site is Staffordshire slipware, which was produced in England from 1670-1795 (Miller and Stone 1970). It is characterized by yellow lead glaze, buff paste and a brown slip applied to the vessel prior to glazing. The brown slip was applied in parallel lines and a thin metal toothed comb was then dragged crosswise over the surface, creating a distinctive design (Figure 4.7). The three fragments recovered during this survey exhibit these general characteristics (98-3-188). All three pieces are from the same STP (11.18) and have been conjoined to form the handle of a mug; it may have been broken during excavation.

A small fragment of lead glazed red earthenware was recovered (98-3-0). Its thin cross-section suggests that it may be part of a drinking vessel (Figure 4.7).

Creamware is a distinctive and popular late 18th and early 19th century ceramic type at many North American historical archaeological sites ((Miller and Stone 1970). It is a refined earthenware first manufactured by Joshia Wedgwood in England in 1762 and continued in popularity into the 1820s. This ceramic type is characterized by white paste, cream colored lead glaze, and molded designs along the rim. The cream colored glaze began as a darker yellow and progressed to a true cream by the mid-1770s. The coloring is most pronounced in the pooling that occurs along base rims and mold decorations. The two pieces recovered from the Fort St. Joseph site represent a plate rim and a bowl body fragment (98-3-198, 98-3-199). Decoration is lacking on these small fragments. The light color of the glaze suggests that these sherds were produced later in the period (ca. 1775-1820). This would overlap with the period of British occupation at the site.

Sherds of 19th-early 20th century ceramics comprise nearly half of the assemblage (n=19). The majority (94.7%) was recovered from the upper terraces. This spatial distribution roughly corresponds with the 19th century farmstead that was once located on this property. Ceramic types include tin glaze earthenware with a light blue interior and white exterior (98-3-30), salt glazed stoneware (98-3-30), unglazed stoneware (98-3-13), and 14 sherds of whiteware.

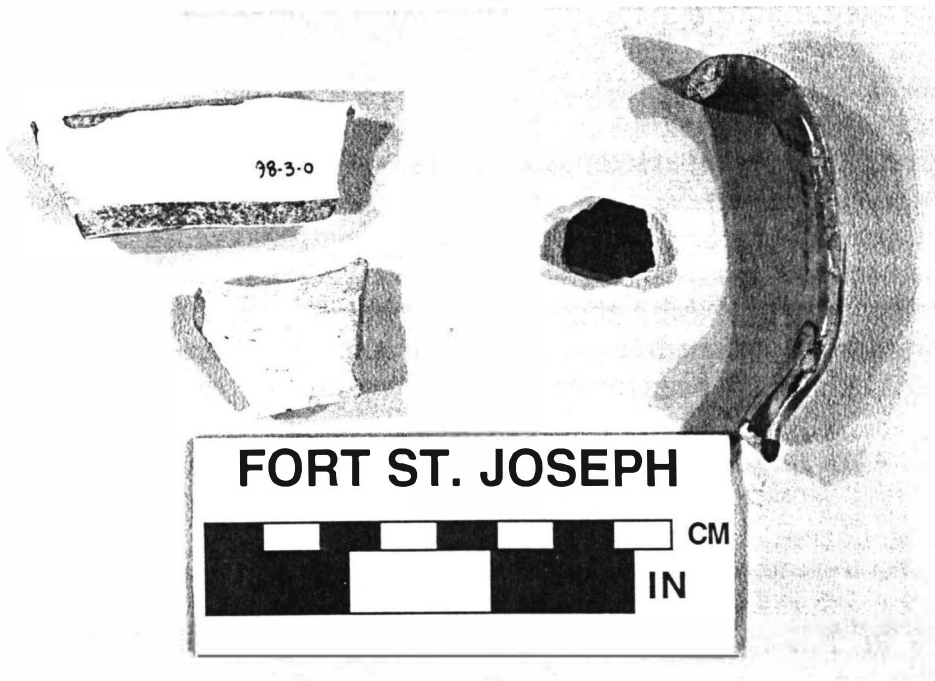

Figure 4.7. Eighteenth-century coarse earthenware ceramics. Left to right: two tin-glazed buff paste sherds; clear lead-glazed red paste; yellow-glazed Staffordshire(?) slipware.

The unglazed stoneware derives from a large vessel similar to bread bowls of the 19th century. These vessels were typically glazed only on the interior (Miller and Stone 1970).

The whiteware sherds consist of one blue transfer print plate rim and a bowl base; the remaining pieces are miscellaneous body fragments. All of these sherds came from the upper terraces and no fragments were found north of the eleventh shovel test pit on any transect.

One yellow stoneware sherd may be from a bowl (98-3-11). A fragment with blue underglazed painting is from a small conical porcelain dish (98-3-120). The container may have been a sugar bowl or a condiment dish. Another porcelain fragment is the base of a plain bowl (98-3-8).

Finally, we recovered a few ceramic types that are probably confined to 20th century production and use dates. Two pieces of red coarse earthenware resemble modern flowerpots in size and shape (98-3-10, 98-3-32). They were recovered from near the landfill. A piece of pink glazed stoneware, ca. 1940s, was recovered from STP 25.7. This location is on the upper terrace, within ten meters of the landfill. A plate fragment of a highly vitrified whiteware, probably "Corell" type, was recovered from the upper terrace (98-3-88). A mid-20th century rim sherd of yellow ware (98-3-105) was also probably introduced through modern dumping. Finally, three small vessel fragments of late 20th century porcelain were recovered from two separate locations (98-3-10, 98-3-27, 98-3-194). Two were from the upper terrace (STP 1.5, 1.11), and one from the floodplain (STP 15.18).

Besides ceramics, glass was also used to contain and transport foods, particularly liquids. Most of the glass from the site (n=174) derives from modern clear, aqua-tinted, green, and amber colored bottles. They come predominantly from the second terrace. However, at least eight pieces of glass are probably hand blown, suggesting an older (18th century?) origin. Six of these pieces were found on the floodplain. Two olive green fragments may have been produced somewhat later, perhaps in the 19th century.

Tableware is also represented by a metal porringer (98-3-0). Although porringers were often made of pewter, this specimen was a shallow brass dish with a decorative handle (Figure 4.4). Despite its fragmentary condition, it probably measured about 14 cm in diameter. Porringers were typically used in the Colonial Era and this example in Kelley's collection comes from along the riverbank.

Two stainless steel spoons found in STP 1.13 represent the flatware in our collection (98-3-15). This marks the southernmost extent of the 20th century dumping activities along this transect.

Another important component of Colonial households that also served as popular objects of exchange were brass, copper, and iron kettles (see Martin 1975; Turgeon 1997; Wheeler 1975). Kettles were extremely durable and hence transportable. They often replaced certain types of ceramic vessels, and sometimes the ceramic technology itself within a generation of their introduction. For various reasons, kettles quickly found their way to the frontier throughout the New World and continue to be important commodities in the expansion and ever-widening penetration of the world economic system.

Since Kelley used a metal detector as a prospecting device, it comes as no surprise that metallic objects comprise the majority of the finds in his collection. Particularly well represented are kettle fragments, lugs, and bails. While most objects are made of brass or copper, the rim from a cast iron kettle is among the objects that he collected (98-3-0). Many of the 15 kettle fragments of copper/brass (98-3-0, 98-3-188) were cut from their original vessel and show signs of reuse. For example, some have rivets, punched holes for the placement of rivets, or several layers of repairs.

Two kettle rims (98-3-173) have folded edges and show signs of reuse. Two copper kettle rim lugs, which are separate pieces of copper that strengthen the attachment of the bail to the kettle, were also found (see Figure 4.4). One (98-3-0) is folded in half with two rivet holes and the other (98-3-173) has a bail hole and was cut off for reuse. Another kettle lug is cast in brass with the number "2" stamped on the reverse (98-3-0) (Figure 4.4). A nearly identical example of this mass-produced piece was found at Fort Michilimackinac (Stone 1974b:Figure 94 g).

Kelley also found one U-shaped side lug during his digging (98-3-0). This copper example is flattened at the ends with two rivet holes. Kettle repairs were often made with rivets. Rivet blanks are diamond-shaped pieces of copper cut from worn copper kettles. They are then rolled and crimped to repair a kettle. The four examples in our collection were cut, but never used. One iron handle fragment that was recovered appears to be a kettle bail (98-3-0). However, due to its fragmentary condition, positive identification is difficult.

One large copper kettle fragment, while very bent and distorted, appears to have been used as a strainer or colander (98-3-0). Twenty-five small holes have been punched in the body of the vessel in a tight diamond pattern (Figure 4.8). A second small piece with similarly sized punctures is present in the items turned over by Kelley. These pieces likely had similar uses. They may have been used in food preparation or possibly other household or commercial tasks such as leaching ash to make lye. Brass colanders could also be used to produce lead shot often known as Rupert Shot, named after Prince Rupert who was the main sponsor of the Hudson's Bay Company (Hook 1961:22-24 cited in Morand 1994:40). Rupert Shot was made by pouring molten lead through the colander

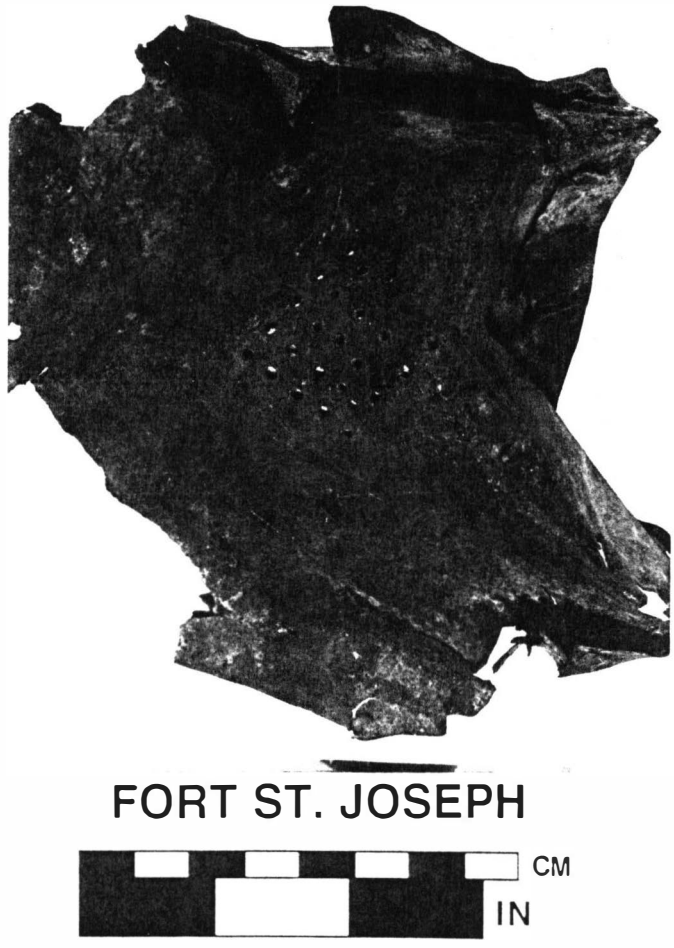

Figure 4.8. Perforated sheet brass strainer.

into a bucket of water. As the lead cooled, small pieces of shot formed with a distinctive morphology resembling the shape of a comet marked by a "tail."

Numerous copper and brass scrap metal pieces (n=49) were also found on the floodplain (98-3-0, 153, 157, 158, 173). Most are related to the reuse of copper kettles in the repair of others and possibly the production of other useful items such as tinkling cones. Some of these fragments still have rivets attached, cut marks, or holes indicating reuse.

Furnishings. Only two objects in our collection can be included in the furnishings category. One is a possible corner protector for a box made of iron found in the upper 17 cm of STP 6.4. The provenience of this object and its general stylistic features indicate that it is probably no older than the late 19th century.

The other is a glass lamp chimney, represented by six small, thin fragments (98-3-21). They are consistent with chimneys in use in the 19th century.

Structural

This category includes various raw materials, architectural materials, and hardware associated with elements of the built environment. Some of these may be only tentatively identified, as their context of discovery precludes definitive interpretations.

Architectural materials. A number of different architectural materials were recovered from our excavations. Given the complex land use history of the project area represented by a colonial occupation, a 19th century farmstead, and a modern landfill, it is not surprising that significant quantities of brick, concrete, construction stone, plaster, mortar, and other materials were recovered.

Sixty-nine brick fragments were found within the survey area (Figure 4.9). Of these, five are clearly of modern manufacture; they are comprised of a hard-fired, bright orange clay. Most of the remaining bricks are made of lighter colored buff to light orange clay. They are also softer than the modern ones and some show imprints of hand formation. Those from the terraces may be associated with the 19th century farmstead that once stood on this property. Twelve bricks were found on the floodplain and may be of 18th century origin. If so, they may suggest the locations of 18th century structural features.

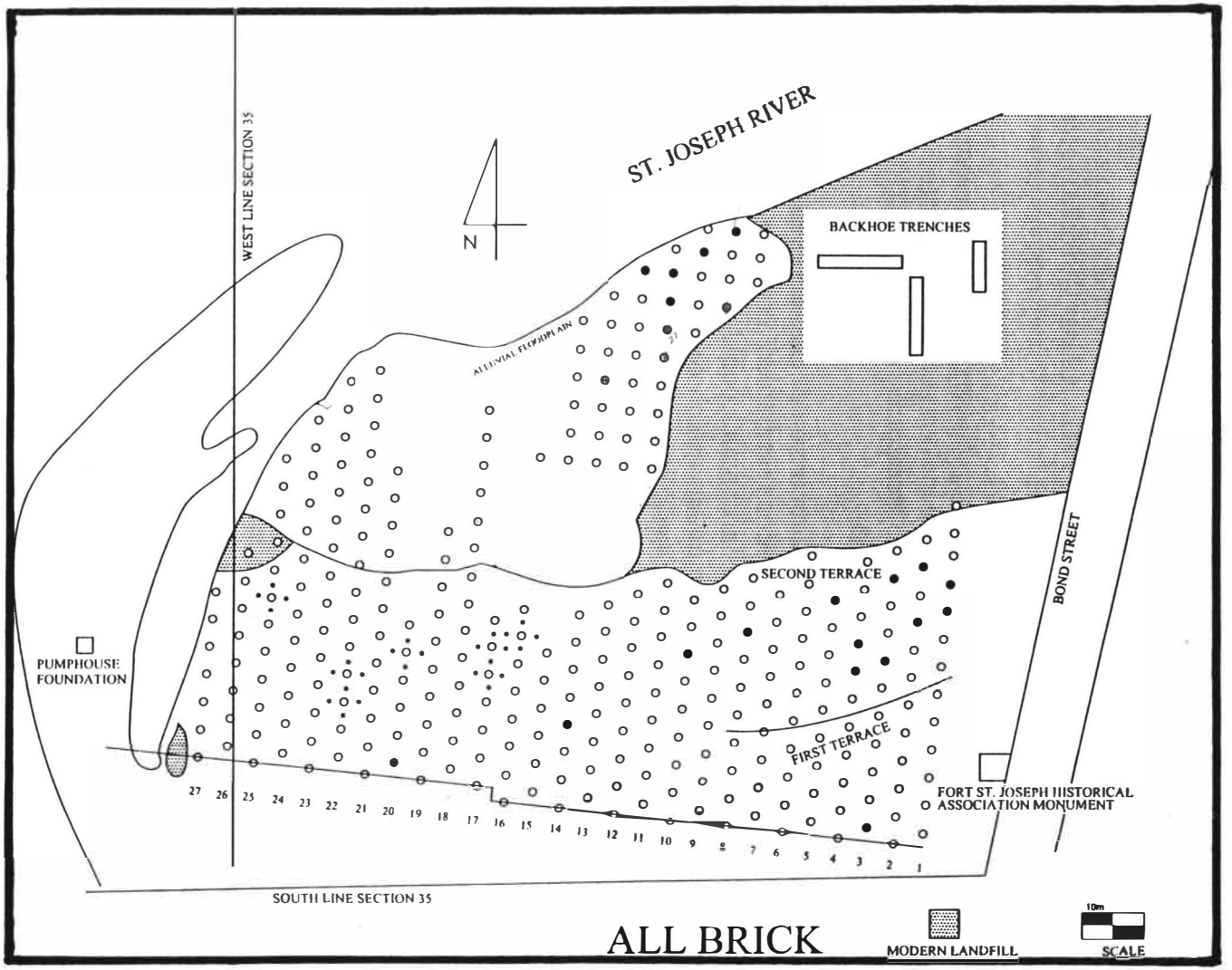

Figure 4.9. Distribution of brick in the project area.

Eighteen pieces of concrete were recovered from the first terrace. Concrete was not commonly used until the 1880s, suggesting that these materials post-date this period (Rotman and Nassaney 1997). These may be associated with the barn indicated on the turn of the century map or more likely the extensive dumping activities in the parcel.

In addition to the brick and concrete, we have identified three different construction materials that are of interest. Examples of chinking, pierrotage, and plaster were recovered from our excavations. Their identifications remain tentative until larger quantities of each of these materials can be recovered in unambiguous context. Chinking is a clay and straw/grass mixture that was commonly used during the 18th century to fill the spaces between upright posts in poteaux-en-terre structures (McDermott 1941). Balesi (1996:203) refers to this same material as "bouzillage" and says that it was "a clay and hay mixed to form a sort of waterproof putty when dry" used to patch the interstices in wooden houses. The 22 pieces from our excavations, all less than 5 cm in diameter, were buff to light gray in color, similar to the local clays, and imprinted with straw. All of this chinking was found on the floodplain in STPs (10.21, 12.19, 12.20, 14.18) that yielded other colonial artifacts.

Unlike bouzillage, pierrotage is a mixture of clay and small stones (Balesi 1996:203). Examples from our excavations resembled a concrete-like compound that was hard, yet friable with sand and small pebble inclusions. It was also confined to the STPs in the floodplain in which other colonial artifacts were found. This material was commonly used in housing and chimney construction in the Illinois Country, serving a similar function as bouzillage (Gums et al. 1991:94-95).

Several authors have noted that French colonial houses had whitewashed exteriors and interiors (Balesi 1996:203; Gums et al. 1991:91). For example, a limestone mortar or plaster preparation pit has been reported from the Cahokia Courthouse site in the Illinois Country (Gums et al. 1991:96-97). In Niles, we recovered a small piece of limestone plaster (2 g) from our excavation in the floodplain near the concentration of colonial objects (98-3-177). This white and friable piece may be the remains of whitewash that covered a habitation structure of the 18th century.

Another construction material in Colonial French architecture is stone. It could be used for chimneys, hearths, the houses themselves, or in foundations in a system called poteaux sur sole. In the latter case, wooden posts were set on a sill made of stones.

Thirteen pieces of fire cracked rock were located on this site. Nine of these were located in the floodplain in close association with other structural components such as chinking and pierrotage. A few stones also had traces of mortar or chinking still attached. In addition, 10 stones were saved as evidence

of large concentrations of stone on the floodplain, particularly in STP 12.20. These constitute strong evidence for 18th century structural features in this location. Peyser (1992:185) noted that "a jail of squarecut stone ten feet long by eight feet wide" was built at Fort St. Joseph in 1750. No stones with purposeful modification have yet been identified in the project area.

Windows in French Colonial houses would have been small, given the difficulty of transporting panes of glass from Montreal, New Orleans, or even closer production centers. Nevertheless, a few pieces (n=9) of hand blown glass fragments, likely of 18th century origin, were found. Four of these were recovered from the floodplain (STP 10.21, 10.22; 12.18, 10.20) and the remainder were scattered on the terraces (STP 1.1, 16.7; 17.6, 19.9, 20.1). All are very thin and one is heavily patinated.

Other construction materials are probably much more recent and are of little historical interest. For example, a fragment of clear, glazed vitreous tile (98-3-9) was recovered from STP 1.10. This modern specimen was probably deposited in the landfill, as were two pieces of sewer tile from STP 1.11 (98-3-10). Modern window glass was scattered over the terraces overlooking the floodplain, though 5 hand blown fragments were included among these 121 pieces.

Hardware. Other components of architecture consist of various types of hardware such as hinges, locks, nails, and other fasteners. Several examples of this class were found.

Two iron hinges were recovered in our investigations (98-3-0, 98-3-153). One hinge is tapered and has a hole for attachment, whereas the other is fragmentary. Their style and context suggest an 18th century origin.

Nails were by far the most common type of hardware recovered in our excavations, with examples spanning the past three centuries. The only style that can be assigned to the colonial period is the hand wrought variety. All but one of the 26 wrought iron nails found during this phase of excavation were found in the floodplain (98-3-0, 100, 131, 178, 185, 188, 189). Those in our sample are typical of 18th century production techniques (Figure 4.10). Generally, they are rectangular or square in cross-section, taper to a point, and have faceted "rose heads" (see also Brain 1979:156; Stone 1974b:229-234, 236). These specimens are in various states of preservation.

Cut nails came into vogue in the 19th century. The 42 specimens in our sample invariably were found on the first and second terraces and roughly correspond with the locations of other 19th century objects. Wire nails (n=28) follow in the chronological sequence and are good 20th century diagnostic artifacts. All but three of the wire nails were recovered from the first and second

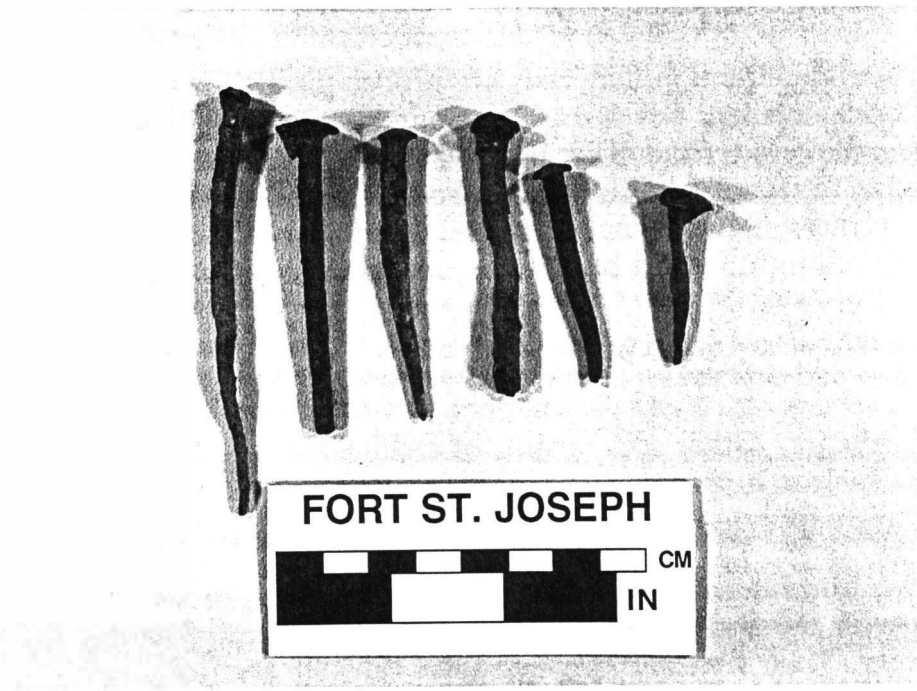

Figure 4.10. Wrought iron nails.

terraces. Most were concentrated near the heaviest dumping areas. A number of unidentified nails and fragments (n=32) were recovered from our excavations. While 13 are square, they are too rusted to determine if they are wrought or cut.

A fastening nut (98-3-108) and screw (98-3-26) from our excavations appear to be modern.

Another colonial piece of hardware appears to be a door lock cover plate (98-3-0) that measures 5.6 x 8.0 cm. It has a hole cut in the center for the insertion of a key. Kelley recovered this object with other 18th century artifacts in the floodplain.

Occupational

The men and women on the frontier engaged in various economic activities to gain their livelihood in addition to the fur trade. Implements used in military, subsistence, and commodity production can exhibit considerable overlap, thereby blurring the distinction between household and occupational tasks. For example, women often engaged in mending and producing clothing in the household. However, some of these products may have been exchanged, thus transforming them into commodities. Other daily tasks such as butchering animals, felling trees, and preparing hides were also performed both for personal consumption as well as exchange. These activities implicated various cutting, piercing, and scraping tools that are potentially recoverable. A range of different artifact types discussed below played an important economic role in colonial life in southwest Michigan.

Guns and gun parts. Perhaps the most important artifact for military, economic, and symbolic purposes was the flintlock musket (Hamilton 1980). Guns provided groups with military superiority and allowed them to intensify subsistence pursuits throughout the 18th century. While Europeans initially controlled the technology of firearms, Native groups soon acquired the technology, learned to produce ammunition, and became proficient at gun repair (Malone 1991). The most durable elements of guns are often preserved and found in colonial archaeological sites (e.g., Hamilton 1979; Mainfort 1979; Turnbaugh 1984). Surviving elements from the project area include various types of flintlock hardware (e.g., butt plates, trigger guards, side plates, ram rod pipe, lock mechanisms). Descriptions of each category follow.

Two complete butt plates (98-3-0) are found in Kelley's collection (Figure 4.11). One (Series A) is an example of the first model British military Grice lock

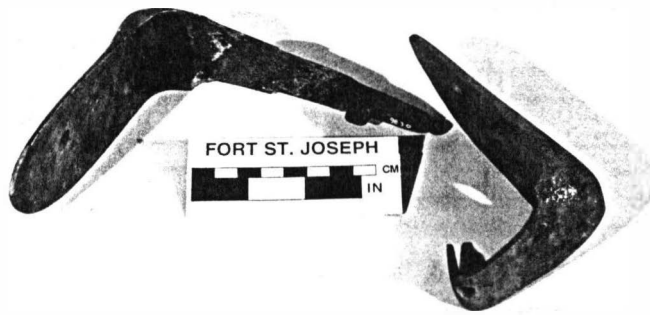

Figure 4.11. Flint lock hardware: butt plates. Left: Longland pattern; right: Shortland pattern.

smooth bore flintlock musket (Hulse 1977: 222; Larry Young, personal communication, 1998). It is commonly referred to as the Longland pattern Brown Bess. Private gunsmiths produced this pattern for the British military in the 1750s. This specimen is made of heavily cast brass and was attached to the butt of the stock with two screws, one at the plate and the other at the corner. The tang has an extension that is inset into the stock and pinned. The interior of the butt plate has the impression of a broad arrow, indicating ownership by the British crown and a second is an unknown maker's mark. Its maximum dimension is 6 inches.

The second specimen (Series B) is an example of the second model British military Grice lock smooth bore flintlock musket (Hulse 1977:222; Larry Young, personal communication, 1998). It is commonly referred to as the Shortland pattern Brown Bess, produced for the British military in 1763. The Shortland pattern butt plate is noticeably different from the Longland by the decreased size of the tang. Also made of heavily cast brass, it is attached with three screws, at the corner, bottom, and butt and has a maximum dimension of 5-5/8 inches.

A third fragmentary butt plate (Series C) was made for an English trade gun in the 1730s-40s (Larry Young, personal communication, 1998). This very thinly cast (type "G") is decorated with an etched leaf design (Figure 4.12). It was attached at the tip of the finial by screws.

Examples of trigger guard hardware were also recovered. All are from the French *fusil fin*, type "C" trade gun, dating between 1685-1730s. This type of musket was manufactured at St. Etienne, France by small household guilds. While all of these pieces are from the same type of gun, the pieces were made individually and therefore show individual creativity and stylistic variation, making each gun unique (Hamilton 1968:7).

Two trigger guard bows (98-3-0) exhibit similar chevrolet designs, characteristic of the type "C" *fusil fin* musket (Figure 4.12). One is cast of iron, the other from brass. Two front tangs are made of brass in a very simple rounded design. The finials have been broken off. Tangs are the mid-section between the trigger guard bow and finial (Hulse 1977). Trigger guard finials are decorative elements of the trigger guard and are useful in the identification of gun types. Five specimens (98-3-0, 98-3-178) are cast from brass, each with its own individual design elements. Design elements include incised scrolls, floral motif, torch form, and combinations thereof. Their individuality indicates that the sample represents five different French *fusil fin* guns.

Three side plates were also recovered (98-3-0) representing three different varieties of trade guns (Figure 4.12). Side plates are decorative additions placed on the lateral margins of flintlock muskets. The first example (Series A) is a very finely cast brass specimen in the form of a serpent. The scales are close together and very detailed. The serpent design is characteristic of the Northwest trade

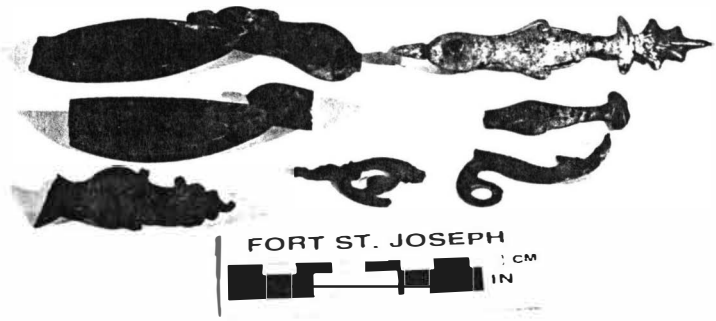

Figure 4.12. Flint lock hardware: butt plates, trigger guards, and side plates. Clockwise (from top left): trigger guard bow; trigger guard finial; trigger guard finial; serpent side plate; floral side plate; butt plate from an English trade gun; trigger guard bow.

gun which was manufactured in France specifically for trade in North America. It has been noted that the scales in the earliest side plates (ca. 1760) were most finely cast, showing extensive detail with the scales placed closely together. In later models the scales are not as close together nor do the serpents appear as realistic (Larry Young, personal communication, 1998).

The second example (Series B) displays open, scrolling floral design typical of the French type "C" *fusil fin*. Hamilton (1968:34 Figure 11) illustrates similar side plates.

The last side plate (Series C) is an angular brass specimen decorated with an incised standard. This crossed flag design was typical of English trade guns from the 18th century (Larry Young, personal communication, 1998).

Kelley also recovered a cast brass ram rod pipe (98-3-0). It was probably associated with the British military Longland or Shortland pattern Brown Bess type musket. Cast ridges are present at the rim of each end and the Roman numerals "XIII XII" are etched on the interior of the pipe. It has been suggested that these interior markings may represent makers' marks and/or assembly numbers used in the production process (Hulse 1977:229; Larry Young, personal communication, 1998). It measures 3.9 cm in length and is 1.5 cm in diameter.

The three pieces of a lock mechanism are all of very high quality and represent mechanisms from three separate guns (Figure 4.13). These differ from the poorer quality of musket hardware that is indicative of trade guns. The lower limb of a main spring (98-3-0) was also recovered. It resembles similar parts of 18th century flintlock muskets. Made of iron, the main spring measures nearly 7 cm in length. A bridle (98-3-0) was also collected. It is from a very high quality iron pistol lock similar to those used by the Jesuit missionaries (Larry Young, personal communication, 1998). One hammer was found (98-3-0). It is associated with an iron flat-faced marine musket of English manufacture (Larry Young, personal communication, 1998) similar to others found at the site (see Hulse 1977:Figure 33). Finally, the one frizzen in the collection (98-3-0) is a rather long flat-faced specimen that is finely crafted from iron. It is probably of 18th century French origin (Larry Young personal communication, 1998).

Nine gunflints, plus one flake, were recovered during the investigations (Figure 4.14). Seven of these are spalls, made of honey-colored flint typical of that imported from France. Spall flints exhibit a bulb of percussion since they were produced from flakes struck from a core. Two of these spalls are small pistol flints. Two of the remaining specimens are blade flints made of gray English flint. All of the flints have a variety of wear patterns that may indicate use both with a flint lock musket and/or a strike-a-light, used for starting fires.

Figure 4.13. Miscellaneous flint lock hardware. Clockwise (from top left): iron frizzen; iron hammer; iron pistol bridle; iron main spring.

Figure 4.14. Gun flints.

Projectiles. Evidence for the manufacture and use of projectiles was recovered from the project area. This consists of stone arrow points and associated chipping debris, as well as lead musket balls and quantities of sprue or lead waste.

Two bifacially chipped projectile point fragments were recovered from the second terrace. Both are made of chert, a locally available lithic raw material. One (98-3-2) is a non-diagnostic fragment, whereas the other (98-3-35) bears formal similarity to Late Woodland-style points. The bow and arrow was in use in southwest Michigan well before the French arrived (see Nassaney and Pyle 1999). While earlier projectile systems (e.g., dart and atlatl) may have been retained in use, the size of the stone points from the project area suggests that they were used to tip arrows propelled with a bow.

Evidence for the production of chipped stone tools in the project area consists of 41 chert flakes and 19 pieces of shatter scattered on the first and second terraces (Figure 3.2). The raw materials represented by this debitage were probably locally available. The low density of this debris argues against intensive use of the area by Native Americans. Nevertheless, the identification of some concentrations of materials through the excavation of additional STPs in the vicinity of STP 17.4-6, STP 20.5, and STP 25.5 warrants further investigation. Significantly, no flakes, shatter, or other exclusively Native artifacts (e.g., low-fired earthenware ceramics) were recovered from the floodplain in association with colonial objects.

Colonial period projectiles are represented by a piece of iron grapeshot and 13 lead musket balls (Figure 4.15). The latter range in size from .50 to .60 caliber, which is consistent with ammunition used in 18th century .60 caliber flint lock trade muskets. The smaller balls (<.60 caliber) would be used in the same size musket, though they would require more wadding than the larger ones (Larry Young, personal communication, 1998). Eight of the lead musket balls have been flattened from impact. Others show mold lines, indicating that they had never been used. This may indicate the manufacture of such musket balls on site. This interpretation is also supported by the quantities of lead sprue found in the project area. French settlements in the Illinois Country including Fort St. Joseph were supplied with raw materials from lead mines near St. Genevieve, Missouri and Prairie du Chien, Wisconsin.

Two pieces of lead shot of .13 and .26 caliber were also used in 18th century muskets. This type of shot is sometimes referred to as "birdshot," indicating its use for hunting smaller game such as birds, ducks, and rabbits.

Modern projectiles are also represented among the materials from the first and second terraces. These include seven .22-caliber gun shell casings and one lead slug (approx. 12-gage shotgun).

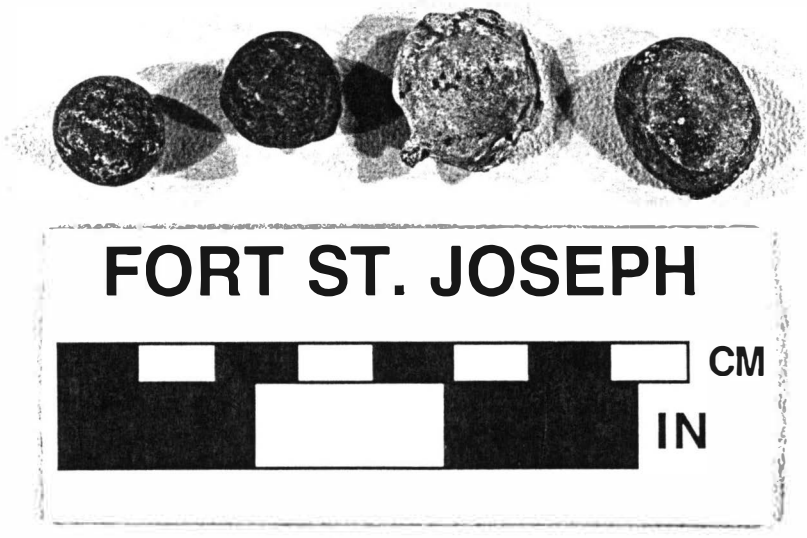

Figure 4.15. Musket balls (approximately .60 caliber).

Knives. Knives were common objects on the frontier, used in a variety of tasks by Europeans and also as important trade goods. During the 1998 survey, 10 knife blades and other cutlery fragments were collected (Figure 4.16). These materials complement the 225 knives in the Fort St. Joseph Museum (Hulse 1977). Knives are often classified by blade shape and size (see Brain 1979: 152-154; Hulse 1977:296-314; Stone 1974b:262-275). The size, shape, and, in some cases, makers marks indicate that the knives in this collection are of 18th century French origin. All but one of the 10 knives was recovered at river's edge during Kelley's collecting activities.

A distinctive type of knife that is often found on 18th century French sites is called the clasp knife (Brain 1979:154; Neitzel 1965; Quimby 1966b). These knives have an angular back blade shape with a flattened knob hinge (Figure 4.16). Three of the four clasp knives in our collection have the cutler's names stamped on the left face of the blade. Although difficult to read, the names appear as ", "ANDRE DR-MAMNO," "-CION-I", and "IEAN PERRIOT." The name of the latter cutler has been previously identified on blades curated in the Fort St. Joseph Museum (see Hulse 1977: 298, Figure 53; Quimby 1939:27). Clasp blades range in size from a complete tiny pen-knife measuring 6.9 cm to a large clasp blade 12.5 cm long.

Two case knives (98-3-0) were recovered; one is a flat knife tang with several iron pins that once attached a wood or bone handle. The other has a flat back and a rounded choil (Figure 4.16).

A single iron table knife is present in the 1998 survey collection (98-3-0). Its rounded bolster is characteristic of 18th century table knives (Figure 4.16). No maker's mark is discernable on this specimen.

Several other unidentifiable knife blade fragments were also recovered. Kelley found two (98-3-0) and we collected a third on the surface in the location of his finds (98-3-211). These fragments range in size from 4.1 to 9.2 cm. The provenience of these objects suggests that they, too, are parts of 18th century knives.

Net weights. Three lead fishing net weights were recovered by Kelley (98-3-0). These are flattened pieces of lead, probably musket balls, with a hole punched in the center (Figure 4.17). These are commonly found at contemporaneous sites in the Midwest such as Fort Michilimackinac (Morand 1994:43). Jelks et al. (1989: Figure 32) identified a similar flattened piece of lead with a single perforation as a "lead whizzer" (cf. Stone 1974b:154).

Figure 4.16. Knives. Top to bottom: case knife; three clasp knives; table knife.

Figure 4.17. Net weights.

Harness buckle. The collection contains one heavily corroded rectangular buckle with rounded edges (98-3-0). Its large size (6 cm) suggests that it may be from a leather harness. It was found in proximity to other 18th century items and is probably contemporaneous with them.

Fastener. Kelley also recovered a small brass fastener (98-3-0) similar to those commonly used to piece together leather straps for a harness or a pouch. It was found with other 18th century artifacts and likely dates to the same period.

Lead seal. Another distinctive object in our collection is a lead bale seal (98-3-0) which was used to seal and identify the contents of packaged goods. These seals would verify the manufacturer, taxes paid, weights, and quantity of goods within a bale. Lead seals frequently occur on 18th century sites throughout the Great Lakes and Mississippi Valley regions (e.g., Adams 1989; Stone 1974b:281-297).

The lead seal that Kelley found is stamped on the obverse with three fleurs-de-lis motifs enclosed by an oval shape with radiating lines (Figure 4.3). Other symbols may be the letter "H," a crown, and a human figure with extended arms, though these are difficult to identify definitively. On the reverse can be seen faint impressions of the textile to which it was attached. The impressions are too faint to identify the weave. None of the seals illustrated by Stone (1974b) resemble this design. Apparently, similar seals have since been recovered from Fort Michilimackinac, though the origin of this type remains uncertain. Lynne Evans (personal communication, 1999) suggests that this style may be from the Dutch Compagnie des Indes (see Adams 1989:21).

Coins. Kelley recovered four coins (98-3-0), all of which are modern copper Lincoln cents. The two with readable dates were minted less than 50 years ago (1959, 1972). The other two illegible specimens are flattened, perhaps by placing them on a railroad track beneath the wheel of a railroad car.

Axes. A total of three axe fragments were recovered (98-3-0, 98-3-185) (Figure 4.18). One fragment (98-3-0) is an iron body of an axe; it is broken at the handle insertion point. The other two (98-3-185) were recovered from the same STP (12.19). They represent pieces of the same sharpened axe blade. These are of very high quality iron, are not heavily corroded, and are still relatively sharp.

Figure 4.18. Hide scraper (left) and axe fragments (right).

Files. We collected two file fragments (98-3-153) on the surface near the area where Kelley was active. It is difficult to determine the age of these objects because file form has remained relatively unchanged over the past few centuries.

Hide scraper. An unusual artifact, perhaps inspired by Native practice but fashioned from European materials, in our collection is a hide scraper (98-3-0). This particular spatula-shaped specimen consists of a modified .60-caliber iron musket barrel (Figure 4.18). It was intentionally split at one end and flattened to create a scraping edge. The proximal end served as a handle. Hide scrapers of this type have been recovered previously from this site and occur at other French colonial sites in the region (Hulse 1977).

Tang. Kelley recovered two iron and one copper tang in his investigations (98-3-0). These are tapered on all four sides and range in size from 3.8-4.8 cm in length. All of these are broken and likely derive from small unidentifiable hand tools such as gouges or files. Given their associations, these are thought to be from the Colonial Era.

Pencil. A possible pencil fragment was found among the objects donated by Kelley (98-3-0). It consists of a square tapered piece of lead, 2.8 cm long. While its identification remains uncertain, it is similar in size and shape to pencils found at other 18th century sites (see Morand 1994:44; Stone 1974b:154).

Subsistence Remains

In addition to the artifacts discussed above, a total of 988 fragmentary animal bones were recovered from numerous test pits across the site (see Appendix C). A few of the skeletal remains may represent natural intrusions of small animals that frequented the site (e.g., small birds). The majority, however, represent food remains associated with the subsistence practices of the site's occupants.

In general, the condition of the bone assemblage is excellent. Its state of preservation is probably due to the age of the remains, their context of deposition, the low acidity of the matrix, and the limited post-depositional disturbances to the deposits. While most of the individual specimens were fragmented, a sizeable number of elements were either large enough or included markings that permitted identification. All of the specimens were identified to

order or class, and 78 have been assigned to the family, genus, and/or species levels. Many of the remains exhibited evidence of butchering marks.

All of the remains were cleaned and cataloged in the laboratory after they were brought in from the field. The analysis began by sorting the faunal material into two groups: (1) elements that were identifiable and (2) fragments of bone too small to be identified beyond order or class. The latter were counted and weighed. The identifiable elements were studied with the help of the comparative skeletal collection at Western Michigan University, and by consulting several animal bone identification texts, particularly Gilbert (1973), Schmid (1972), Sisson and Grossman (1953), and others (Hesse and Wapnish 1985; Olsen 1968, 1979, 1985). Along with the identifications, other relevant factors that were recorded include the degree to which epiphyseal fusion was evident, the presence of butchering techniques, and the age, condition, and any modification of the bone specimens.

Minimum number of individuals (MNI) of each species represented in the faunal assemblage was calculated. This method, explained by Grayson (1984), involves identifying left and right side skeletal elements present for each taxon, which then reveals the minimum number of individuals represented by those elements. These data are summarized in Table 4.1. While researchers agree that calculating MNI is the best way to determine the number of each taxon represented in a faunal assemblage, the investigator must be aware of biases inherent in determining MNI (Grayson 1984; Klein and Cruz-Uribe 1984; Stiner 1994). The Fort St. Joseph faunal assemblage was not immune to some of these biases.

First, excavation techniques influenced the composition of the bone assemblage and only a small area of the site was actually sampled. In addition, "dry" screening using predominantly 1/4" mesh was employed. Therefore, smaller elements, such as those associated with fish, may be underrepresented. Further, the excavation conditions did not lend themselves to tight vertical control, making it impossible to determine which artifacts, including bone, were above or below others in the excavated units. Finally, butchering of all, or some, of the animals may have occurred elsewhere on or off the site. While a few of the excavated units produced teeth and/or cranial elements, many of the skeletal elements recovered from most of the excavated units could represent only those parts of animals utilized by the occupants of the site. More extensive excavation of the Fort St. Joseph site might present a different picture of species selection and diet.

Whenever possible, the age at death was also determined. There are several methods that can be used to estimate the age at death for various mammalian species. Wildlife and game biologists require this data to improve the management of large game animals (Severinghaus 1949). Domestic mammals, such as cows, pigs and sheep, have also been studied in great detail

Table 4.1. Number of identifiable elements and the minimum number of individuals (MNI) by species at the Fort St. Joseph Site (20BE23).

Genus/Species	No. of Elements	MNI
Mammal		
Bos taurus (domestic cow)	1	1
Odocoileus virginianus (white-tailed deer)	53	4
Ondatra zibethicus (muskrat)	1	1
Procyon lotor (raccoon)	3	1
Sus scrofa (domestic pig)	4	1
Sylvilagus floridanus (eastern cottontail)	1	1
Ursus americanus (black bear)	1	1
Bird		
Meleagris gallapavo (wild turkey)	3	2
Aythya, species unidentified (duck/goose)	3	2
Undetermined	6	2
Amphibian		
Rana, species unidentified (frog)	1	1
Fish		
Cyprinus carpio (European carp)	1	1
TOTAL	78	

(Sisson and Grossman 1953). From this body of research have emerged techniques of varying reliability for estimating age in individual mammals.

The timing of tooth eruption remains the most often cited and most reliable method for estimating the age of mammals (Gilbert 1973; Hillson 1986; Severinghaus 1949). However, only individual teeth have been observed among the Fort St. Joseph faunal assemblage; there were no full mandibles and maxillas, making it impossible to judge tooth eruption. Therefore, a second technique was employed to analyze these elements from the site assemblage—that of tooth wear patterns.

In his studies of tooth wear patterns of white-tailed deer, Severinghaus (1949:213) contends that wear on teeth should be recognized as a "dependable means of judging" age in those mammals in which growth and development are well understood. However, Severinghaus (1949) acknowledged some problems with this method of tooth wear patterns in white-tailed deer, as have other researchers (Gilbert 1973; Hillson 1986; Ryel et al. 1961). Severinghaus' (1949:202) main concern was limited to "abnormalities" in tooth wear, which he believed were not significant enough to produce serious errors in aging deer.

In contrast, Hillson (1986) has raised some interesting questions pertaining to using wear on teeth to age mammal bone. According to Hillson (1986:213), attempts to record attrition by using measurements of crown height involve a number of assumptions. First, within a species, and within each individual's life, the rate of wear remains constant. Second, in all individuals within a species, the starting, or unworn crown height, is the same (even though teeth vary widely in size among individuals). Third, teeth erupt at the same age in all individuals within a species. Finally, age at death corresponds to the end of functional life for all permanent teeth. Because of these assumptions, Hillson (1986) maintains that aging a species according to crown wear is somewhat subjective, which could lead to discrepancies among researchers. Since sex, nutrition, and growth factors are variable in any species, these factors can become sources of error in aging (Hillson 1986). At the same time, however, Hillson (1986:184) also states that if a researcher is dealing with one homogeneous population in which the rate of wear is "reasonably constant", it is possible to assume that the "extent of wear is a function of age." Therefore, even if the rate of wear is not known absolutely, an individual's age at death within a population can still be determined by comparing the amount of wear reached at death to other individuals within that same population. Admittedly, absolute ages cannot be determined from wear on teeth, though age range can be estimated.

Gilbert (1973) also raised concerns about Severinghous' (1949) method of aging deer from visually inspecting tooth development and wear. His main objection is that white-tailed deer exhibit different rates of tooth wear, depending on the region in which they live. While the Severinghaus method was developed using specimens of New York State white-tailed deer, other researchers have

found significant variation in white-tailed deer populations from Massachusetts and Texas (Severinghaus and Cheatum 1956). Ryel et al. (1961) have found that Michigan game biologists could not produce consistency in using Severinghaus' (1949) method; they tended to underage deer over four years old and overestimate the age of fawns less than a year old. Further, Ryel et al. (1961) reported that there were significant differences in the rate of tooth replacement in fawns and yearlings of Upper and Lower Michigan. Finally, they noted that deer throughout Michigan exhibited a slower replacement of incisors and premolars and a much-reduced rate of wear on all cheek teeth when compared with the deer used in the original New York study.

In the Fort St. Joseph faunal assemblage only three white-tailed deer teeth lent themselves to analysis using Severinghaus' (1949) method, as revised by Ryel et al. (1961) for Michigan populations. The three white-tailed deer teeth represented in this faunal assemblage include two molars and a premolar, which suggest that the age at death was between 8 and 12 months.

Another method for estimating age in mammals involves the timing of epiphyseal fusion in some skeletal elements, particularly the long bones. In all mammals, including humans, the long bones, such as the femur, humerus, and ulna are formed, in utero, as cartilaginous models (Gilbert 1973). According to Gilbert (1973), there are centers of ossification in each cartilage model, representing the shaft (diaphysis) and the articular ends (epiphyses). The shaft begins to ossify in the middle initially, and then extends toward both ends, which ossify last. Although there is usually just one center of ossification on the ends of long bones, the humerus has two centers, both located on the proximal head. In quadrupeds, the metacarpals and metatarsals can also be considered long bones, as they have ossification centers at their distal ends, as well as on the shafts. Until all growth in the length of the bone is completed, an epiphyseal plate of cartilage separates the shaft and epiphyses. This cartilage plate becomes narrower and eventually disappears with age when the shaft and end become a single bone. There are orderly, age-related sequences of epiphyseal closure for humans and some mammalian quadrupeds (Gilbert 1973; Purdue 1983). Whenever possible, degree of epiphyseal fusion was used to estimate age at death for the taxon represented at the Fort St. Joseph site.

A number of the white-tailed deer skeletal elements (n=20) recovered from various test pits across the site could be assessed for age of death. These represent at least 4 individuals. Half (50%) of the partial bone elements that allowed the investigator to judge epiphyseal fusion exhibited characteristics such as billowing surfaces, lack of epiphyses, and prominent lines between the shafts and epiphyses. The term "billowing" is used to describe the creases and bumps seen on the surface of the ends of bones where they connect to the epiphyses. Typically, the ends will become smooth after they have fused with the epiphyses Gilbert 1973). This suggests that these bones derive from individuals that were sub-adults (<2 years old) at the time of death. Unfortunately, no other estimates

could be determined for age at death for other species represented in this faunal assemblage.

However, since the greatest proportion of skeletal remains in the faunal assemblage represent white-tailed deer, it is quite possible to suggest some preliminary observations concerning the inhabitants of Fort St. Joseph. An equivalent ratio of sub-adult:adult deer elements may actually be what one might expect in a population that was selected randomly. If the sub-adult remains were shown to be over-represented, this would have implications for hunting selectivity. In Lower Michigan, most fawns are born in June (Severinghaus and Cheatum 1956:100). Many of the female offspring stay with their mother until they are between 18 and 24 months (Severinghaus and Cheatum 1956:117). Male deer usually stay with their mother until approximately 12 months of age (Severinghaus and Cheatum 1956:134). However, in the spring and summer months, female white-tailed deer often form loose associations with other females and fawns for short periods of time; full adult and sub-adult bucks may also be present (Severinghaus and Cheatum 1956:135). In the fall, during breeding season, full adult bucks may again be present within groups of females and sub-adults (Severinghaus and Cheatum 1956:135). During winter months, these loose associations break up and typically, only an adult female with offspring can be found travelling together; adult males are solitary, while sub-adult males may form small groups of their own (Severinghaus and Cheatum 1956:137).

A higher proportion of sub-adult deer elements could indicate the inexperience of the French in hunting this species of animal. They would have been easier to hunt, given that they traveled in groups. The site inhabitants may have also selected sub-adults if they were under stress and having some difficulty procuring enough food for themselves. Under these conditions they may have found it easier to choose sub-adult deer from small bands, rather than spend the time hunting solitary, adult deer.

Of course, the sample at hand is much too small to make any definitive statements about the hunting strategies of the inhabitants or their dietary preferences. These are the types of questions that could be addressed with a more complete assemblage acquired through larger-scale excavations.

Some sense of species selectivity can be gained from the range of animal species identified among the recovered specimens. Moreover, they exhibit parallels and divergences from other French Colonial faunal assemblages (e.g., Jelks et al. 1989:75-108; Martin 1991). Based upon the identifiable skeletal elements in the assemblage, it appears that the occupants preferred white-tailed deer above other available meat resources. Of the 78 elements identified to genus and/or species levels, 53 were assigned to white-tailed deer. Further, of the 910 skeletal fragments identified only to order or class, approximately 750 to 800 of

these were mammal bone fragments comparable in size to those of white-tailed deer bone elements.

Of the identifiable white-tailed deer elements, only four (2 scapulae, 1 calcaneus, and 1 phalange) exhibited what appeared to be straight butchering cuts, probably from a saw. The remainder displayed shallow knife cuts, uneven breakage (perhaps from axe cuts?), or no apparent butchering marks at all. Of the remaining identified skeletal elements in the assemblage, only one, a domestic cow femur (N206 W96), exhibited a definite saw cut, and this may have been made with a power saw. All other identifiable elements were unevenly broken, or did not display any obvious butchering techniques.

The use of a saw in the butchering of large animals did not typically occur before the mid-19th century. Prior to this period, animal carcasses were dismembered using axes, hatchets, and knives. Thus, most of the bone from the site shows evidence of butchering that is consistent with colonial practices. The large sawn cow bone was likely intrusive. It was found in association with a dermal plate from a European carp that was not introduced into the region until the late 19th century.

There were seven elements in the assemblage assigned to wild turkey, duck or goose. Of these, six elements (scapula, sternum fragments, and humeri) indicate a preference for breast meat. Further, more extensive excavations could add greater numbers of game bird elements to this faunal assemblage, allowing a more thorough analysis.

Apart from the carp bone mentioned above, fish elements are conspicuously absent from the Fort St. Joseph faunal assemblage. This is particularly surprising given the proximity of the site to the river and the albeit limited presence of fish bones in other contemporaneous colonial sites in the region (e.g., Jelks et al. 1989:78). The large size of many of the fish that would have been found in the river (and their corresponding large bones) suggests that recovery procedures alone cannot account for the missing fish. Obviously, only a small area of the site was sampled; more extensive excavations may reveal areas of the site where fish were processed and their bones discarded. Likewise, the use of water-screening and flotation in subsequent investigations will provide a more systematic means of sampling elements from smaller species to provide a more representative sample of dietary preferences. The absence of beaver is also noteworthy. One might expect that at least some beaver were being processed for food and furs in the vicinity of the site. The complete absence of beaver, should this pattern also be reflected in a larger sample, may suggest that this animal had been trapped out of the area by the 18th century. This question can be evaluated in future investigations.

Finally, domesticated species are confined to the previously mentioned cow along with four teeth from pig. While French colonists in southwest Michigan would have had to rely on local food sources initially, by the 18th

century domesticated animals had been being introduced. Hutchins observed horses, mules, and a few milch cows at the site by 1762. Pigs and sheep were probably introduced even earlier and lived to reproduce in their new habitat had they survived the long voyage from Detroit, Fort Michilimackinac, or Montreal. Pigs were one of the easiest animals to transport to the New World, and they proved to be efficient foragers in Lower Michigan, requiring little care from their owners. Pig bones have been found at many other colonial sites in the midcontinent, so it would not be surprising to find them at Fort St. Joseph by the first quarter of the 18th century. An ongoing research question concerns the relative contribution of domesticated and wild animal species to the colonial diet in southwest Michigan, and how subsistence pattern changed throughout the 90-year period of the site's occupation.

Miscellaneous Modern Objects

A significant number of predominantly 20th century artifacts were recovered from our excavations. Many of these have not been discussed thus far. Despite their numerical majority, most of these objects have limited historical significance. Perhaps their densities may assist in delineating activity areas for the modern period sometime in the future. A select sample of these objects is discussed below.

Two ceramic figurines (98-3-27, 98-3-15) were recovered in close proximity to the modern landfill. Their context suggests that they were deposited sometime in the mid-20th century (1930-1960).

Coal fragments were scattered over the second terrace (n=41). Only one piece was found on the floodplain (W95 N206) and it was recovered from the upper 20 cm in a recent cultural stratum. Coal slag or clinkers were also concentrated on the second terrace (n=100). The 13 pieces from the floodplain were not deeply buried (ca. 0-20 cm).

CHAPTER 5

MANAGEMENT SUMMARY AND RECOMMENDATIONS

Michael S. Nassaney

MANAGEMENT SUMMARY

A thorough reconnaissance survey was conducted in search of the remains of Fort St. Joseph. The survey consisted of documentary research, informant interviews, systematic shovel test pits, backhoe trenching, and limited magnetic prospecting. Field investigations have identified several areas of the 15-acre parcel which are archaeologically sensitive. The first and second terraces contain albeit sparse traces of Native American and colonial activity. More intensive work may be warranted here to determine the extent of this material and its possible association with the larger concentration of colonial materials to the north. Remains of the 19th century occupation in the area may also be of interest should they prove to have contextual integrity.

In the course of our survey, we received information quite fortuitously from a local collector about his activities along the riverbank in the project area. He brought a varied and interesting collection of 18th century colonial objects to our attention and showed us the location of his finds. Subsequent systematic investigations in the area demonstrated that portions of a colonial occupation appear to be relatively undisturbed in the floodplain of the survey area. Moreover, the location of these remains is almost precisely indicated by an anonymous turn-of-the-century map that long existed in the Fort St. Joseph Museum. It appears that this map was compiled by L. H. Beeson on the basis of information recounted by early pioneers and published in local sources and other late 19th century accounts (e.g., Beeson 1900).

Prior to our investigations, the conventional wisdom concerning the disposition of the fort was that it had either been washed away by the river or buried beneath 6-8′ of landfill. While we were not able to put either of these hypotheses to rest, it appears that both may be partly correct. Given that Kelley's finds came from the edge of the river bank this past summer when the water level was lower, it seems likely that some of the colonial occupation in this vicinity is either underwater or has been eroded away by the river.

We are less certain whether or not the artificial fill dumped at the site has covered some of the remains of Fort St. Joseph. Given the proximity of the landfill to the STPs that yielded colonial artifacts in the floodplain, it seems likely that some these cultural deposits may be buried beneath the fill. The limited backhoe trenching conducted at the edge of the landfill, however, failed to

identify buried colonial deposits. It seems that more work of this nature is needed before we can rule out the possibility that the landfill served to protect and preserve archaeological remains in places.

Unexpectedly, we identified an area of the floodplain between the river and the landfill where subsurface investigations revealed what appear to be undisturbed deposits of artifacts and ecofacts (i.e., animal bone) associated with the colonial occupation of Fort St. Joseph. *These finds are extremely significant.* Their location corresponds with the area where Kelley had earlier collected kettle fragments, gun parts, knife blades, and other Colonial Era objects. Unfortunately, we encountered the water table at 15-20 cm below the ground surface in all of the STPs dug in this area of the floodplain, including those STPs that yielded 18th century cultural material. These conditions made it extremely difficult to examine the stratigraphy, identify features, and establish vertical and horizontal spatial relations. Nevertheless, it is my opinion that there is extremely good potential to unearth important information about the colonial occupation from more systematic and extensive horizontal and vertical excavations in this vicinity. This work should be oriented towards determining the spatial extent (vertical and horizontal) of the cultural deposits and assessing their integrity. Any form of subsurface disturbance should be avoided in this location of the project area until further evaluation can be conducted.

In conclusion, there exists in Niles along the east bank of the St. Joseph River a deposit of 18th century artifacts, which all indications suggest are associated with the remains of Fort St. Joseph established by the French in 1691 and occupied for over nine decades. Very little information currently exists on many aspects of the fort and what life was like for the colonial occupants and Native Americans who frequented the site. Because of the paucity of documentation, the archaeological remains at the site provide an unprecedented opportunity to investigate the history of early European settlement and its impact on Native peoples in the western Great Lakes.

Whereas archaeology has proved to be fruitful at numerous sites in New France, in the Illinois Country, and at Fort Michilimackinac, the site of Fort St. Joseph has had no professional investigations until this project. In fact, up until now, the site was assumed to be lost to the ravages of erosion or buried beneath the debris of 20th century America. Despite the toll that these forces may have taken on the site, we can now demonstrate that enough of the site still exists to deserve a closer examination. In the following section, I detail what subsequent stages of investigation should entail and the types of research questions that should guide scholarly study. The site provides a unique opportunity to write a new chapter in the history of colonial America—a chapter that up until now has been buried in mud, silt, and ashes.

RECOMMENDATIONS

As discussed throughout this report, we have thus far conducted a reconnaissance archaeological survey aimed at identifying physical evidence of potential archaeological and historical significance, with an emphasis on the material remains of the fort. Before a large-scale excavation can be planned, a second phase of investigation is needed to evaluate the integrity of the archaeological remains. This next stage—an intensive archaeological survey—consists of more intensive subsurface investigations aimed at determining the spatial (horizontal and vertical) extent of the site and assessing context of the remains. In brief, this work aims to answer the following questions. How large and how deep is the site? Does the site contain materials in undisturbed archaeological context that can answer important research questions of local, regional, national, or even global significance? The site may be shown to have integrity and possess a range of data classes that can be recovered archaeologically (e.g., a broad range of artifact types, well-preserved subsistence remains, cultural features and other architectural evidence). If so, then the site can be considered significant, a broad range of research questions can be addressed, and a large-scale data recovery project (Phase III) is warranted. This latter stage would likely be a multi-year project. For example, data recovery at Fort Michilimackinac is now in its fortieth year. It is the site of the longest continuous excavations in North America. Before discussing the types of data classes that may exist at the site and the kinds of research questions that could be answered, let me first present a summary of how one might proceed with an intensive archaeological survey.

Survey Methodology

A number of different techniques need to be implemented to evaluate the significance of the Fort St. Joseph site. In the remainder of this discussion, I use the term "site" in reference to the location of the floodplain that yielded 18th century materials and adjacent areas. Perhaps one of the most difficult logistical challenges that the site presents is the extremely high water table that precludes an unambiguous assessment of the depth of deposits and their horizontal relationships within excavation units. It is necessary to lower the ground water level along the floodplain at the site. This can be accomplished in two ways. (1) According to Graves (1974), the dam that controls the water level of the flood pool has two risers that can be removed. By removing these risers, the river level will be lowered by 2 feet. If this lowers the water table by 2 feet (60-70 cm), this should be adequate to dry out the site. (2) In tandem with the removal of the risers, a series of well points should be placed on the site to further dry out the water-logged sediments. A dewatering wellpoint system is capable of capturing both any surface and subsurface waters, and discharging them away from the excavation area (Doran and Dickel 1988:268). This technique is a means of

lowering the level of the water table by pumping water out of the site through pipes inserted into the ground. The depth of the pipes is determined by the permeability of the sediments. Wellpoints have been used in archaeological application at wet sites in Florida (Doran and Dickel 1988) and in Michigan in the Saginaw River drainage (Dean Anderson, personal communication, 1999).

By both removing the risers on the dam and using wellpoints, the water table on the floodplain can be lowered by 2-3 feet (60-90 cm) thereby drying out the matrix that contains the 18th century cultural deposits on the site. The fieldwork should also be conducted during the time of year when the water table is usually lowest. While this is difficult to predict from year to year, data compiled for the mean daily discharge of the St. Joseph River at Niles for 1995-96 (October-September) indicates that the river's maximum discharge (maximum height) is in late March-early April. The river's minimum discharge (minimum height) is in late September and October (see Figure 5.1).

Some field techniques prior to subsurface testing can occur while the water table is being lowered. For example, previous work has demonstrated that large quantities of metal (iron, brass/copper, lead) and some stones comprise the archaeological deposits of the site. The stones may be related to site features such as chimneys or hearths. Documentary evidence also indicates that a stone jail was constructed at the site in 1750 (Peyser 1992:185). Thus, the nature, depth, and content of the deposits and the likelihood of architectural remains indicate that the site is well suited to the use of a range of geophysical techniques designed to identify subsurface anomalies. Proton magnetometry, electrical resistivity, electrical conductivity, and ground penetrating radar (GPR) have proven useful in guiding subsurface investigations in intensive archaeological survey at other historical sites in southwest Michigan (Nassaney et al. 1999; Sauck 1998). A comprehensive geophysical survey can be conducted in the floodplain area of the site before wellpoints are established. Large concentrations of iron, other magnetic metals, bricks, and ceramics can be detected using proton magnetometry, whereas there is a high probability that cultural features (e.g., house foundations, pits, middens, hearths, palisade lines) can be located with GPR and conductivity. While metal objects associated with the landfill may influence the magnetic results at the margins of the site, the site conditions should be conducive to successful application of the other techniques.

After the geophysical survey is complete and while the wellpoint system is being established, several backhoe trenches can be dug through the landfill in the heavily wooded area beginning at the junction of the floodplain and the fill. These trenches should be excavated about 2-3 m in depth to the base of the fill in order to expose the old ground surface. If these sediments are relatively dry, excavations should proceed below the old ground surface (50-80 cm) and these sediments should be carefully examined for colonial artifacts. The profiles of the trenches should also be scraped and carefully studied to detect artifacts, features, or other anomalies. The trenches should be placed at close intervals (ca. 5 m) and

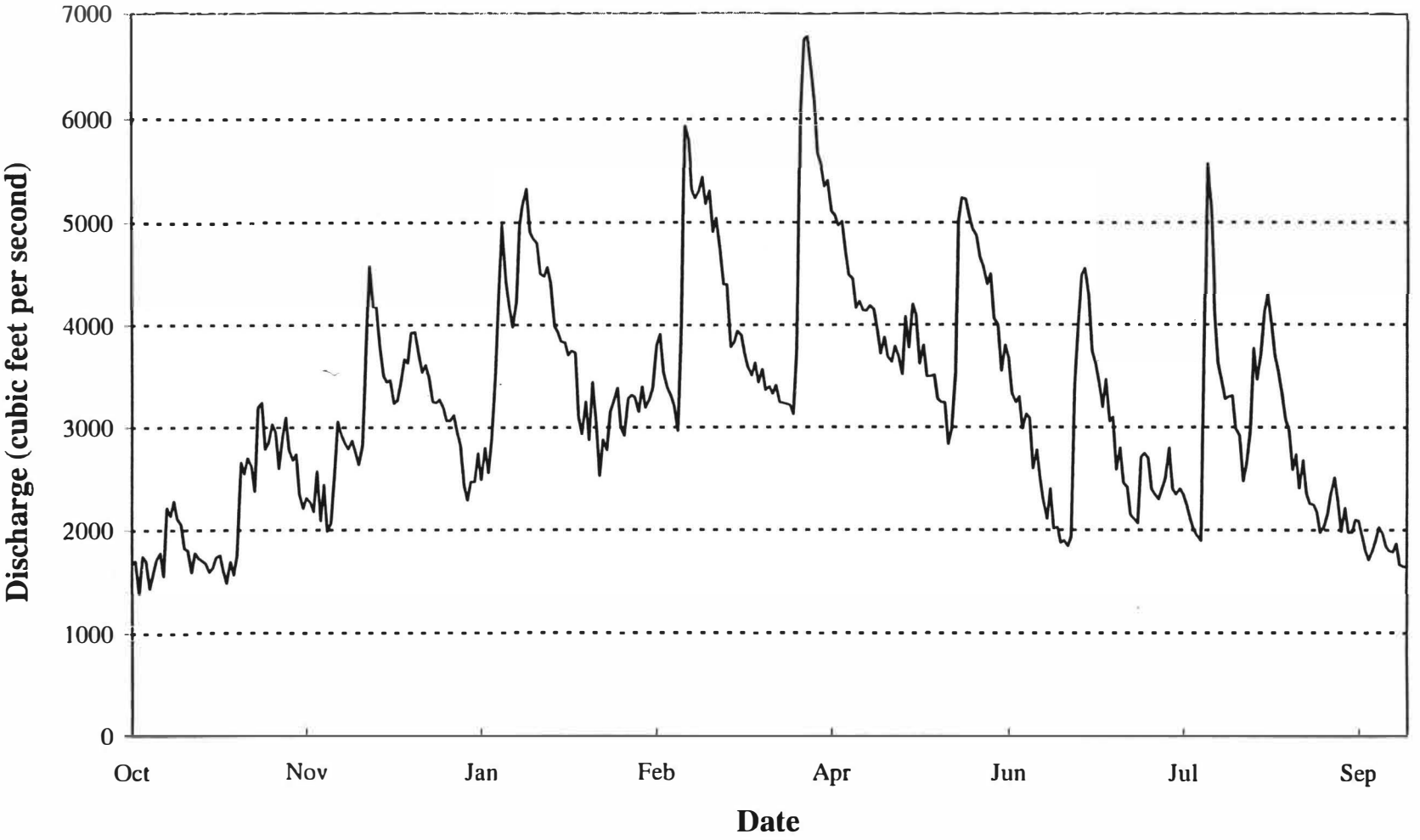

Figure 5.1. Mean daily discharge of the St. Joseph River at Niles for 1995 (from Wesley and Duffy 1998).

dug systematically in the areas east and south of the site in the floodplain. By doing so, the question of the presence of deposits buried beneath the landfill can be definitively answered.

It is also appropriate to expose larger areas through excavation in the floodplain in this stage of investigation. Excavation is needed to: 1) reveal the contextual patterning among the artifacts, ecofacts, and features uncovered, and 2) assess the functional and temporal significance of that patterning (Sharer and Ashmore 1993:239). Because the excavation of larger units is labor intensive, it is important to maximize the probability of locating subsurface remains. Information obtained from previous work (i.e., the reconnaissance survey) and the geophysical survey can be used to guide the placement of excavation units. For example, many of the Phase I STPs that yielded positive results could be expanded to 1 x 1 m or 1 x 2 m units. Similar sized units can also be used to investigate geophysical anomalies. This also serves to ground-truth the geophysics, allowing us to refine our expectations for different electrical and magnetic signatures. At this stage of the investigations we should also expand the horizontal extent of excavation units whenever needed to determine the nature of cultural features. For example, if a post hole or a small concentration of stones are uncovered in the corner of an excavation unit, the unit should be expanded to better understand the nature of the feature. The post may prove to be part of a palisade, or the stones might be associated with an architectural feature such as a hearth, wall, or chimney fall. While these features need not be excavated in their entirety at this stage of the investigations, they should be examined in enough detail to determine their function and/or potential to contribute significant historical information.

From the soil matrix and artifacts observed in the reconnaissance survey at the site, the best way to maximize recovery and assure a representative sample of artifactual materials is by implementing a system of water screening and flotation, particularly from the matrix of features such as hearths, pits, and middens. All excavations should be conducted in arbitrary 5-cm levels within natural and cultural stratigraphic units. All matrix should be collected and subjected to water screening using a system of pumps and graduated screen mesh sizes (1/4", 1/8", 1/16") established along river's edge in proximity to the site. This will assist in the recovery of small artifacts (e.g., seed beads) and ecofacts (e.g., bird and fish bones) that normally might be missed. In addition, the preservation of the animal bone recovered thus far suggests that other organic remains may be preserved at the site. Therefore, we should be prepared to implement conservation measures should we find specimens of wood, textiles, bone artifacts, and other fragile or unstable materials (e.g., corroding metals). These and other materials recovered from the site will provide a valuable artifact assemblage that can be compared with the collection that currently exists in the Fort St. Joseph Museum as well as materials from other French colonial sites in North America and beyond. They should also allow us to establish with greater

certainty that the materials from the site actually represent the archaeological remains of Fort St. Joseph.

The site of the 18th century fort is also expected to have evidence of architectural remains. Detailed drawings should be made of post hole patterns, hearths, chimney falls, stone foundations, and other structural evidence so that these features can be relocated on the ground and explored through larger block excavations in any subsequent work.

A Generalized Preliminary Research Design for the Fort St. Joseph Site

At this stage in the process, it is difficult to predict with any certainty precisely what data classes exist in the ground at the Fort St. Joseph site, although the initial results are encouraging. The material remains of features and their association with artifacts and ecofacts have the potential to yield significant historical information about late 17th and 18th century life in French Colonial America. Archaeologists usually employ a research design to guide their data recovery strategies. A research design specifies the types of questions that are being asked and the ways to collect information so as to maximize the probability of answering the questions. In the following discussion I begin to outline elements of a research design for the Fort St. Joseph site. This plan assumes that significant artifactual, ecofactual, and architectural remains exist at the site. Until the character of these remains can be defined through an intensive archaeological survey, the research design must be fairly generalized. This is meant to be an illustrative exercise. It aims to point to the types of information that may lie buried at the site, underscore the many possibilities for future analysis, and sensitize the reader to the kinds of research questions that are being addressed elsewhere in French Colonial archaeology (see Waselkov 1997).

In his recent review of the archaeology of French Colonial North America, Waselkov (1997) identifies many areas in which researchers have made great strides over the past few decades. Through archaeological studies, a better understanding has emerged regarding Native interactions, the colonization process, ethnic identities, material culture, exchange, subsistence, and the built environment. Waselkov concludes by noting that works in the field lack an explicit theoretical perspective, and much of the work has been conducted "to assist with architectural restorations and public interpretations" (1997:25). In some ways, this may be a reflection of the field's stage of maturation and parallels can be seen in the wider arena of historical archaeology. To cast this state of affairs in a positive light, there is ample opportunity to explore a broad range of research topics under the umbrella of French Colonial archaeology.

In the following discussion, I present some thoughts on research questions that are being pursued in anthropology, historical archaeology, and history which may have implications for future work in Niles. This discussion is meant

to be illustrative and not exhaustive. Much of this thinking is based on the comparative method. This method is a powerful interpretive tool that can be used to assess variation in the archaeological record at multiple scales of analysis (e.g., within sites, between sites). Once variation is identified, the challenge for the archaeologist is to development a social, ecological, and historical context within which that variation can be interpreted. For example, different types of animal bones may be found within and between French colonial archaeological sites in a region. These differences may reflect different environments at the regional scale (e.g., lacustrine vs. riverine setting), whereas differences between households within a site may relate to the status of the occupants (e.g., voyageurs vs. military officials). A rich database in the Great Lakes-Riverine region can be employed for comparative purposes to interpret the archaeological record of Fort St. Joseph. From this perspective, the materials previously collected from the fort which lack detailed provenience information can also be used to explore some of the questions discussed below.

The goals of a large-scale data recovery project should be oriented towards the needs of the client, the public, and the scholarly profession. In the case of this project, there is a great deal of overlap among the goals of these constituents. For example, information is needed on the precise location of structures, original building materials, and the size and configurations of houses, palisades, and other special purpose buildings (e.g., jail) in order to create an accurate reconstruction of the fort. While this information serves the needs of Support the Fort, Inc. and is a benefit to the public, it would also be of interest to the scholarly community due to the limited information available on French construction methods in New France and the Illinois Country. Moreover, it is only through archaeology that information can be recovered for an accurate reconstruction of the fort because no detailed documents describing the buildings at the site are known to exist.

Information should be sought regarding the composition of artifact assemblages within the site and the patterning of those assemblages. For example, what types of artifacts were essential on the frontier? Which were imported from the homeland despite the costs involved and which could be produced locally? Do the ceramic types exhibit the same range of variation seen in larger regional centers such as Fort Michilimackinac? Were certain types of ceramics restricted to segments of the population at the fort? Among the materials collected in this project were fragments of both trade guns and guns intended for use by the French and English. How are these distributed within the site? Are workshop areas for the repair of kettles or production of lead musket balls integrated within the household or segregated to a particular area within the site? How were activities associated with animal butchering, food preparation and discard spatially organized on the site?

Even in our preliminary work, we have uncovered a rich array of faunal remains that likely represent the animal foods consumed at the site. How does

the general subsistence profile (e.g., species composition) compare with other contemporaneous sites such as Fort Ouiatanon or Fort Michilimackinac (e.g., see Martin 1991; Scott 1984)? Were there dietary differences based on social status, or cultural preferences that distinguished the French from Native populations? How did animal exploitation patterns change from the pre-Contact period through the British period and to what extent can these changes be linked to over exploitation? For example, the absence of beaver bones in our admittedly small sample may suggest that beaver had been trapped out of the area by the 18th century in response to the demands of the fur trade. Did this have implications for the fur trade? The recovery of larger samples from undisturbed contexts can be used to evaluate these propositions.

A persistent theme in the documentary record is the different relations that the French and English cultivated with their native hosts. Generally, the French were more likely to intermarry with local peoples and close relations of interdependency often developed. In contrast, the British saw themselves as more aloof, though they still attracted the Native suppliers of furs with their inventory of trade goods. By comparing and contrasting the archaeological remains from the French and British periods at Fort St. Joseph, can we gain an insight into the different cultural practices and attitudes that guided European and Native American interactions during the 18th century (cf. Trimble et al. 1991:186-188). For example, if there was a decrease in the frequency of interactions between Europeans and Native Americans, we might expect to see a corresponding decrease in the proportions of trade goods in the archaeological remains from the site. Likewise, increased independence and autonomy may be reflected by changes in species composition from a predominantly wild faunal assemblage to greater quantities of domesticated animal remains (e.g., cows, sheep, pigs) as has been demonstrated for Fort Michilimackinac (Cleland 1970). We can be certain that significant changes would have taken place over nearly a century of Colonial occupation at the fort, and those changes can be monitored through material remains. The record serves as an independent data set that can be used to evaluate hypotheses generated from the sparse documentary record.

Another area of inquiry that is attracting increasing interest is the study of Contact period gender relations through the archaeological record (e.g., Scott 1991a, 1991b, 1994; Nassaney 1999; Van Kirk 1980). In French Colonial America, as on the continent, men and women had different roles and responsibilities in daily life. These daily practices surely distinguished the French from their Native hosts when they first encountered each other in the 17th century. However, new demands for labor and the expansion of exchange into new markets on the frontier often transformed the expectations of men and women. To what extent could traditional economic roles and relationships be reproduced on the frontier? Was this even desirable? It is well known that European men far outnumbered women on the frontier. This factor often led men of marriageable age to seek out Native spouses. Did these native spouses live within the confines of the fort and did their activities differ from their French counterparts? Did men

and women initially attempt to fill traditional roles, only to modify these as they became acculturated to Native patterns? This would be interesting should it prove to be the case because most scholars have usually focused on the changes in Native societies brought about by European colonization and settlement and assumed that change was predominantly unidirectional. Many of these questions can be addressed by examining the context of various artifact types and interpreting their patterning within and between households. Although women are nearly mute in the documents, their voices are more likely to be heard in the archaeological record through the objects they made, used, and discarded in distinctive and potentially identifiable ways. Similarly, archaeology can also provide a voice for the voyageurs who left few written words about their way of life and the struggles that they endured on the edge of civilization. These research questions represent only a small subset of the types of issues that can be addressed potentially from the archaeological record of Fort St. Joseph should a subsequent site evaluation indicate that there are undisturbed archaeological remains at the site.

CONCLUSIONS

An archaeological survey of the project area along the St. Joseph River in Niles, Michigan, has identified the remains of a colonial deposit that is likely associated with Fort St. Joseph. These remains are located almost precisely where Beeson (1900) described them nearly a century ago. While portions of the deposit may have been eroded away by the river and/or covered by 6-8 feet of sanitary landfill, there appear to be intact deposits that remain relatively undisturbed. These deposits were identified in 13 STPs covering an area of about 30 m in diameter. The spatial (horizontal and vertical) extent of the site remains undetermined. The site has enormous scholarly and interpretative potential and will be sure to attract the interest of public and private supporters alike if the site's significance can be appropriately conveyed. Depending on what material remains exist on the site, their integrity, and their state of preservation, the site may very well prove to be not only of local and regional interest, but also deserve national and global recognition.

The colonial deposits at the site have a high archaeological sensitivity. Fortunately, most of the remains (except possibly those along the river bank) are buried beneath 20-30 cm of alluvial sediments, which afford the cultural deposits a degree of protection. Some deposits may also extend beneath the landfill. *Nevertheless, rigorous efforts should be taken to secure the area and prohibit unauthorized personnel from entering and disturbing the site.* Local attempts to dig for personal gain could be a particularly acute problem. There is sure to be tremendous interest in the site and this discovery among both the public and the scholarly community. This was evident in the media coverage following the release of information about the discovery last November (1998). It is critical to

emphasize in all subsequent announcements that the site is extremely sensitive and trespassing will not be tolerated. A detailed and well conceived research design should be developed to guide any further investigations of this site. An initial draft of such a research design has been prepared in this report.

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APPENDIX A

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Tom Kelley, Support the Fort

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Wayne Mann, former Director of the Regional History Archives, WMU

Barbara Mead, Michigan Historical Center, Lansing, Michigan

Dr. Joseph Peyser, Professor Emeritus, University of Indiana, South Bend

Al Smith, Friends of the St. Joseph River Association, Athens, Michigan

Hal Springer, Support the Fort

Larry Young, Mackinac State Historic Parks

Phil Whitfield, Support the Fort

APPENDIX B

ARTIFACT INVENTORY

This Appendix contains a listing of all artifacts recovered during the 1998 field investigations including those collected by Tom Kelley and donated to the project. Explanations of the column headings are as follows:

Acc: This refers to the accession number (in sequential order) of all the proveniences that were kept separate. Typically, it refers to materials from a single level in a particular shovel test pit or a discrete surface location within the project area.

Trans: This designates the transect number (see Figure 3.1).

STP: This designates the number of the shovel test pit (see Figure 3.1). It roughly corresponds with the distance from the base line along a particular transect.

Depth: This refers to the depth at which the materials were recovered.

Material: This category lists the raw material of the object.

Functional Type: This category refers to the general function of an object or group of objects.

Description: This category provides more detailed information about the form or function of the object or group of objects. Fragmentary materials are denoted by the abbreviation "frag."

Count: The number of objects within a designated group.

Size: The maximum length or diameter of an object, typically given in mm unless otherwise indicated.

Weight: The total weight (in grams) of the object(s) within a designated group.

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-0	8-9	23+		Brass	Buckle, shoe	Cat. 1, SA, T2, Va	1	29.36x34.27	
98-3-0	8-9	23+		Brass	Buckle, shoe	Rectangular frame only, vertical incised lines			
98-3-0	8-9	23+		Brass	Butt plate	Brown bess longland pattern musket	1		
98-3-0	8-9	23+		Brass	Butt plate	Etched leaf design - trade gun	1	57.75	
98-3-0	8-9	23+		Brass	Cuff links	Jesuit - Double heart w/crown and cross, connected	1		
98-3-0	8-9	23+		Brass	Ramrod pipe	Brown Bess - makers mark "XII" "XIII"	1	38.58	
98-3-0	8-9	23+		Brass	Side plate	Fusil fin - floral design	1	3.8/40	
98-3-0	8-9	23+		Brass	Side plate	Serpent design c. 1760s	1	50.02	
98-3-0	8-9	23+		Brass	Side plate	Standard - flag design	1	46.8	
98-3-0	8-9	23+		Brass	Trigger guard bow		2		
98-3-0	8-9	23+		Brass	Trigger guard finial	Fusil fin	1	100.85	
98-3-0	8-9	23+		Brass	Trigger guard finial	Fusil fin	1	3.821	
98-3-0	8-9	23+		Brass	Trigger guard finial	Floral design w/scroll work	1	59.77	
98-3-0	8-9	23+		Brass	Trigger guard finial	1 hole for screw mount	1	93.39	
98-3-0	8-9	23+		Brass	Trigger guard tang	Front tang w/ finial broken off	2	77.44/38.2	
98-3-0	8-9	23+		Ceramic	Lead glazed earthenware	Rim frag.	1		
98-3-0	8-9	23+		Ceramic	Tin glazed earthenware	Rim and body frag.	2	30cm dia.	
98-3-0	8-9	23+		Flint	Blade	English, Gray, burned	1		
98-3-0	8-9	23+		Flint	Gun spall	French, Honey colored	4		
98-3-0	8-9	23+		Glass	Burned glass		4		
98-3-0	8-9	23+		Iron	Buckle, harness	Rectangular frame w/rounded corners	1	59.5	
98-3-0	8-9	23+		Iron	Butt plate	Brown bess shortland pattern musket	1		
98-3-0	8-9	23+		Iron	Frizzen		1		
98-3-0	8-9	23+		Iron	Grape shot	.60 caliber	1		
98-3-0	8-9	23+		Iron	Hammer	Musket	1		
98-3-0	8-9	23+		Iron	Knife, clasp	Angular blade back w/flattened knob, "IEAN FERRIOL"	1	109.43	
98-3-0	8-9	23+		Iron	Main spring	Lower limb	1	69.65	
98-3-0	8-9	23+		Iron	Wrought nail		7		
98-3-0	8-9	23+		Lead	Lead seal	3 fleur-de-lis encircled by oval w/radiating lines	1		
98-3-0	8-9	23+		Lead	Musket ball	Heavily dimpled - tooth marks	1	Approx. .50 cal	
98-3-0	8-9	23+		Lead	Musket ball	Mold lines - unused trade gun	3	.58/.57.54 cal.	

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-0	8-9	23+		Lead	Musket ball	Flattened - used trade gun	7	Approx. .58 cal.	
98-3-0	8-9	23+		Pewter	Buckle, belt	D-shaped frame w/hinge bar	1	37.88	
98-3-0	8-9	23+			Bridle	Pistol	1		
98-3-0	8-9	23+		Iron	Knife, clasp	"-CION-I"	1	124.54	
98-3-0	8-9	23+		Iron	Knife, clasp	:lat blade back, w/flat knob "ANDRE DR_BAMNO", heel onl	1	60.77	
98-3-0	8-9	23+		Iron	Knife, case	Rounded heel, flat blade back, tapers to point - tip broken	1	166.2	
98-3-0	8-9	23+		Iron	Knife, case	Flat handled shaft, tip only	1	102.69	
98-3-0	8-9	23+		Iron	Knife, table	Rounded bolster	1	70.3	
98-3-0	8-9	23+		Iron	Knife, frag	Heavily cast - beveled edge	1	92.29	
98-3-0	8-9	23+		Iron	Knife, frag	Unidentifiable	1	41.22	
98-3-0	8-9	23+		Iron	Awl	Square, off-set attachment	1	68.3	
98-3-0	8-9	23+		Iron	Axe	Neck only, blade missing	1		
98-3-0	8-9	23+		Iron	Plane Blade		1	76.6	
98-3-0	8-9	23+		Copper	Tang	Square, tapered - gimlet, gouge?	1	37.84	
98-3-0	8-9	23+		Iron	Tang	Rectangular , tapered	1	44.14	
98-3-0	8-9	23+		Iron	Tang	Rectangular , tapered	1	47.5	
98-3-0	8-9	23+		Iron	Hinge	Sheet iron, tapered end w/hole for nail	1	69.09	
98-3-0	8-9	23+		Iron	Door lock cover plate		1	55.6/79.6	
98-3-0	8-9	23+		Brass	Thimble	Tapered sides w/ convex top	1	13.75	
98-3-0	8-9	23+		Iron	Thimble	Top only	1		
98-3-0	8-9	23+		Lead	Net weights	Circular w/hole punched in center	3		
98-3-0	8-9	23+		Brass	Fastener	Leather strap fastener, prongs on reverse	1		
98-3-0	8-9	23+		Brass	Porringer	Shallow dish w/decorative handle - frag. w/ repair	1	approx. 160dia.	
98-3-0	8-9	23+		Iron	Handle	Kettle bail?	1	64.8	
98-3-0	8-9	23+		Iron	Hide scrapper	Flattened gun barrel	1	95.66	
98-3-0	8-9	23+		Brass	Kettle lug	Cast brass, "2" stamped on reverse	1	38.25	
98-3-0	8-9	23+		Copper	Kettle rim lug	Folded in half, 2 rivet holes	1		
98-3-0	8-9	23+		Copper	Kettle side lug	"U" shaped, flattened ends 2 rivet holes	1		
98-3-0	8-9	23+		Copper	Kettle rims	Cut, reused for repairs	2		
98-3-0	8-9	23+		Copper	Strainer	25 punched holes in body, reused for repairs	2		
98-3-0	8-9	23+		Copper	Rivet blanks	Diamond shaped, varying sizes	4		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-0	8-9	23+		Copper	Kettle frags.	Frags. w/rivets, cut off from body, reuse	5		
98-3-0	8-9	23+		Copper	Kettle frags.	Frags. w/punched holes, reuse	9		
98-3-0	8-9	23+		Copper	Scrap sheet copper	Most w/cut marks, reuse	33		
98-3-0	8-9	23+		Brass	Scrap sheet brass	Reuse	2		
98-3-0	8-9	23+		Iron	Scrap iron		4		
98-3-0	8-9	23+		Brass	Wire		2		
98-3-0	8-9	23+		Lead	Waste lead	Molded to a shallow container	5		
98-3-0	8-9	23+		Lead	Waste lead	Melted - no shape	11		
98-3-0	8-9	23+		Lead	Waste lead	Flattened	6		
98-3-0	8-9	23+		Lead	Waste lead	Round w/hole in center	1	23.7	
98-3-0	8-9	23+		Lead	Pencil	Square bar tapered end	1	27.95	
98-3-0	8-9	23+		Copper	Hair pipe		1	34.5	
98-3-0	8-9	23+		Brass	Tinkling cone		1	24.3	
98-3-0	8-9	23+		Brass	Ring	Undecorated	1	.8in/20.3	
98-3-0	8-9	23+		Granite	FCR		2		384.5
98-3-0	8-9	23+		Copper	Unidentified	Poss. container lid - round w/ punched holes, incised circles	1	20.5 dia.	
98-3-0	8-9	23+		Bone	Bone comb	Body only - teeth broken off	1		11.6
98-3-0	8-9	23+		Faunal	Bone		4		12.1
98-3-0	8-9	23+		Copper	Penny	U.S. Penny, flattened by R.R. 1959, 1972	2		
98-3-0	8-9	23+		Brass	Bottle cap	Modern, threaded screw cap	1	22 dia.	
98-3-0	8-9	23+		Iron	Razor blade	Modern, single blade	1		
98-3-0	8-9	23+		Aluminum	Washer		1	9.77 dia.	
98-3-0	8-9	23+		Iron	Hook	Modern, small slide hook	1		
98-3-0	8-9	23+		Lead	Weight	Modern, bell shaped w/ hole in center	1	21.1	
98-3-0	8-9	23+		Lead	Weight	Modern, cone shaped w/ tab	1	22.6	
98-3-0	8-9	23+		Aluminum	Scrap Aluminum		3		
98-3-0	8-9	23+		Iron	Can	Modern, heavy corrosion	8		
98-3-1	1	1	0-44	Chert	Flake		1		
98-3-1	1	1	0-44	Chert	Shatter?		1		
98-3-2	1	3	0-56	Chert	Shatter		2		
98-3-2	1	3	0-56	Faunal	Bone		1		2.5

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-2	1	4	0-24	Chert	Bifacial point		1		
98-3-2	1	4	0-24	Chert	Flake		1		
98-3-4	1	5	0-30	Chert	Flake		1		
98-3-5	5	1	0-5	Iron	Bar	Unidentifiable	1		
98-3-6	1	7	0-32	Ceramic	Whiteware	Blue transfer print, plate rim 19th c.	1		
98-3-6	1	7	0-32	Iron	Cut nail		1		
98-3-7	1	8	0-15	Ceramic	Whiteware		1		
98-3-7	1	8	0-15	Cement	Cement		1		16.8
98-3-7	1	8	0-15	Iron	Crown cap		1		
98-3-7	1	8	0-15	Iron	Wire nail		2		
98-3-7	1	8	0-15	Iron	Unidentified	Unidentifiable	2		
98-3-7	1	8	0-15	Aluminum	Unidentified	Unidentifiable	3		
98-3-8	1	9	0-60	Ceramic	Whiteware	19-20th c. bowl, base	1		
98-3-8	1	9	0-60	Ceramic	Porcelain	19-20th c. bowl, base, molded	1		
98-3-8	1	9	0-60	Glass	Bottle glass	Modern	3		
98-3-8	1	9	0-60	Plastic	Unidentified	Unidentifiable	4		
98-3-8	1	9	0-60	Clay	Brick	Light orange	19		
98-3-8	1	9	0-60	Asphalt	Asphalt		1		
98-3-8	1	9	0-60	Iron	Cut nail		3		
98-3-8	1	9	0-60	Iron	Unidentified	Unidentifiable	7		
98-3-8	1	9	0-60	Aluminum	Snap	Garment snap	1		
98-3-9	1	10	0-58	Plastic	Hair fastener	Modern, comb tooth	1		
98-3-9	1	10	0-58	Plastic	Unidentified	Unidentifiable	2		
98-3-9	1	10	0-58	Aluminum	Unidentified	Unidentifiable	2		
98-3-9	1	10	0-58	Ceramic	Tile	Modern, vitreous	1		
98-3-9	1	10	0-58	Ceramic	Whiteware		3		
98-3-9	1	10	0-58	Glass	Burned		1		
98-3-9	1	10	0-58	Glass	Bottle glass	Modern, clear	12		
98-3-9	1	10	0-58	Glass	Bottle glass	Modern, amber	1		
98-3-9	1	10	0-58	Iron	Wire nail		2		
98-3-9	1	10	0-58	Iron	Cut nail		5		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-9	1	10	0-58	Iron	Nail frag.	Unidentifiable	8		
98-3-9	1	10	0-58	Iron	Crown cap	Flattened	1		
98-3-9	1	10	0-58	Iron	Unidentified	Unidentifiable	2		
98-3-9	1	10	0-58	Clay	Brick	Buff to deep orange	4		14
98-3-9	1	10	0-58	Coal	Coal		1		0.4
98-3-10	1	11	0-22	Ceramic	Porcelain	Modern	2		
98-3-10	1	11	0-22	Glass	Bottle glass	Modern	36		
98-3-10	1	11	0-22	Glass	Window glass	Modern, greenish-gray	1		
98-3-10	1	11	0-22	Plastic	Misc. frags.	Unidentifiable	2		
98-3-10	1	11	0-22	Plastic	Toy	Unidentifiable	1		
98-3-10	1	11	0-22	Plastic	Plastic fiber	Unidentifiable	3		
98-3-10	1	11	0-22	Paper	Painted paper	Unidentifiable	1		
98-3-10	1	11	0-22	Clay	Sewer tile		2		
98-3-10	1	11	0-22	Ceramic	Flower pot	Modern	1		
98-3-10	1	11	0-22	Aluminum	Scrap	Shavings	4		
98-3-10	1	11	0-22	Iron	Wire nail		5		
98-3-10	1	11	0-22	Iron	Unidentified	Unidentifiable	4		
98-3-10	1	11	0-22	Coal	Coal slag		6		
98-3-11	1	11	22-54	Ceramic	Yellowware	19-20th c. stoneware	1		
98-3-11	1	11	22-54	Glass	Bottle glass	Modern, clear	2		
98-3-11	1	11	22-54	Iron	Cut nail		4		
98-3-11	1	11	22-54	Iron	Nail frag.	Unidentifiable	1		
98-3-11	1	11	22-54	Iron	Wire		1		
98-3-11	1	11	22-54	Iron	Sheet iron	Unidentifiable	1		
98-3-11	1	11	22-54	Coal	Coal slag		1		
98-3-12	1	11	54-74	Iron	Barrel hoops		2		
98-3-12	1	11	54-74	Iron	Cut nail		8		
98-3-12	1	11	54-74	Iron	Wire nail		1		
98-3-12	1	11	54-74	Iron	Nail frag.		2		
98-3-12	1	11	54-74	Glass	Bottle glass	Modern, clear	3		
98-3-13	1	12	0-53	Ceramic	Stoneware	Bread bowl rim, 19-early 20th c.	1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-13	1	12	0-53	Glass	Bottle glass	Modern, threaded lip, "The CRO--- KENTU----"	1		
98-3-13	1	12	0-53	Aluminum	Scrap	Shavings	1		
98-3-14	1	13	0-9	Plastic	Misc. frags.	Unidentifiable	3		
98-3-14	1	13	0-9	Glass	Bottle glass	Modern	7		
98-3-14	1	13	0-9	Tar	Tar		1		
98-3-14	1	13	0-9	Aluminum	Washer		1		
98-3-14	1	13	0-9	Coal	Coal		1		
98-3-15	1	13	9-78	Ceramic	Figurine	Modern, "Glamour Girl USA" on base, ca. 1940-50s	1		
98-3-15	1	13	9-78	Glass	Marble	Modern	1		
98-3-15	1	13	9-78	Steel	Spoon	Stainless steel, modern	2		
98-3-15	1	13	9-78	Iron	Scissors	Modern	1		
98-3-15	1	13	9-78	Iron	Can lid	"DELCO_REMY", square	1		
98-3-16	2	1	0-55	Chert	Flake		1		
98-3-16	2	1	0-55	Iron	Wire nail		1		
98-3-17	2	2	34-55	Plastic	Sheet plastic		1		
98-3-18	2	5	0-33	Cement	Cement	Modern	8		14.7
98-3-19	2	6	0-20	Chert	Shatter		1		
98-3-19	2	6	0-20	Glass	Bottle glass	Modern, amber	1		
98-3-20	2	8	0-65	Glass	Burned		1		
98-3-20	2	8	0-65	Glass	Window glass	Modern	72		
98-3-20	2	8	0-65	Glass	Bottle glass	Molded, 19-20th c., aqua tint	1		
98-3-20	2	8	0-65	Lead	Musket ball	.60 caliber	1		
98-3-20	2	8	0-65	Iron	Cut nail		3		
98-3-20	2	8	0-65	Iron	Unidentified	Unidentifiable	1		
98-3-20	2	8	0-65	Coal	Coal		1		3.5
98-3-21	2	9	0-10	Glass	Lantern Chimney	Very thin	6		
98-3-21	2	9	0-10	Glass	Bottle glass	Modern, clear	7		
98-3-21	2	9	0-10	Glass	Window glass	Modern	1		
98-3-21	2	9	0-10	Clay	Brick	Modern	2		
98-3-21	2	9	0-10	Iron	Wire nail		1		
98-3-21	2	9	0-10	Iron	Can + frags.		17		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-21	2	9	0-10	Coal	Coal slag		2		
98-3-21	2	9	0-10	Plastic	Electrical tape		1		
98-3-22	2	9	0-20	Chert	Flake		1		
98-3-22	2	9	0-20	Glass	Mirror frag.	Modern	1		
98-3-22	2	9	0-20	Iron	Can frag.	Modern	2		
98-3-23	2	10	0-20	Glass	Bottle glass	Modern, amber	1		
98-3-23	2	10	0-20	Iron	Cut nail		3		
98-3-24	2	11	0-10	Glass	Window glass	Modern, thick	1		
98-3-24	2	11	0-10	Glass	Bottle glass	Green crown rim	1		
98-3-24	2	11	0-10	Plastic	Toy truck tire		1	28 dia.	
98-3-24	2	11	0-10	Clay	Brick	Modern	1		64.4
98-3-24	2	11	10-50	Ceramic	Whiteware		1		
98-3-24	2	11	10-50	Iron	Cut nail		2		
98-3-25	3	1	0-43	Clay	Brick	Orange	2		2.3
98-3-26	3	2	0-22	Iron	Screw	Modern?	1		
98-3-27	3	5	0-13	Ceramic	Porcelain	Modern, 20th c.	1		
98-3-27	3	5	0-13	Iron	Cut nail		1		
98-3-28	3	7	0-56	Ceramic	Whiteware		1		
98-3-28	3	7	0-56	Glass	Bottle glass	Modern	1		
98-3-28	3	7	0-56	Clay	Glazed brick	Brownish-orange (tile?)	2		4.4
98-3-28	3	7	0-56	Clay	Brick	Orange	11		31.8
98-3-29	3	7	56-60	Clay	Brick	Tiny frags.	3		
98-3-29	3	7	56-60	Chert	Shatter		1		
98-3-30	3	8	0-53	Ceramic	Saltglazed earthenware	White glaze, buff paste late 19th-20th c.	1		
98-3-30	3	8	0-53	Ceramic	Tin glazed earthenware	Light blue interior, white exterior 19-20th c.	1		
98-3-30	3	8	0-53	Glass	Bottle glass	Modern, mold blown, 20th century, clear	4		
98-3-30	3	8	0-53	Iron	Cut nail		1		
98-3-30	3	8	0-53	Coal	Coal		2		
98-3-31	3	9	0-21	Glass	Window glass	Modern, clear	1		
98-3-32	3	11	10-45	Ceramic	Whiteware figurine	Modern	1		
98-3-32	3	11	10-45	Ceramic	Flower pot	Modern, painted yellow on exterior	1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-32	3	11	10-45	Glass	Marble	Modern	1		
98-3-32	3	11	10-45	Glass	Milk bottle	Modern, locally distributed	1		
98-3-32	3	11	10-45	Glass	Medicine bottle	"Bromo-Seltzer EmersonDrug Co.", cobalt blue	1		
98-3-32	3	11	10-45	Iron	Barbed wire		1		
98-3-32	3	11	10-45	Iron	Crown cap		1		
98-3-32	3	11	10-45	Iron	Spark plug	"Champion - 7 Made in USA"	1		
98-3-32	3	11	10-45	Aluminum	Starter	"Bryant Starter FS 4 Pat. No. 2200443, 2297886"	1		
98-3-32	3	11	10-45	Aluminum	Shave cream tube	"Sanitary Beard Softener Barbasol"	1		
98-3-33	4	1	0-20	Chert	Flake		3		
98-3-33	4	1	0-20	Glass	Bottle glass	Modern, molded "Nile-"	2		
98-3-33	4	1	0-20	Iron	Sheet	Unidentifiable	1		
98-3-34	4	2	0-30	Chert	Flake		2		
98-3-34	4	2	0-30	Iron	Cut nail		1		
98-3-34	4	2	0-30	Iron	Wire		1		
98-3-35	4	2	30-40	Chert	Bifacial point	Body only, late woodland	1		
98-3-36	4	3	30-117	Chert	Flake		2		
98-3-36	4	3	30-117	Coal	Coal		3		
98-3-36	4	3	30-117	Glass	Window glass	Modern	1		
98-3-37	4	1	20-50	Chert	Flake	Secondary	2		
98-3-40	4	7	0-44	Chert	Flake		2		
98-3-40	4	7	0-44	Clay	Brick	Buff colored, handmade	1		23.8
98-3-40	4	7	0-44	Clay	Brick	Orange	2		4.3
98-3-41	4	7	44-60	Glass	Window glass	Modern	1		
98-3-41	4	7	44-60	Clay	Brick	Modern, machine made, deep orange	1		25.9
98-3-42	4	8	20-39	Ceramic	Prehistoric ceramic	No decoration	1		
98-3-42	4	8	20-39	Iron	Can	Modern	1		
98-3-42	4	8	20-39	Granite	FCR		2		99.3
98-3-43	4	8	39-60	Chert	Flake		1		
98-3-43	4	8	39-60	Clay	Brick	Handmade, gray	1		
98-3-43	4	8	39-60	Clay	Brick	Orange	1		
98-3-43	4	8	39-60	Granite	FCR		1		145.4

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-44	4	10	0-7	Granite	FCR		1		57.2
98-3-45	4	10	7-15	Ceramic	Prehistoric ceramic	Shell tempered, cordmarked	1		
98-3-46	4	10	15-29	Glass	Bottle glass	Modern, amber	1		
98-3-47	4	11	0-52	Glass	Bottle glass	Modern, clear	2		
98-3-47	4	11	0-52	Plastic	Burned plastic	Unidentifiable	1		
98-3-47	4	11	0-52	Iron	Unidentified	Unidentifiable	1		
98-3-47	4	11	0-52	Coal	Coal		7		5.6
98-3-47	4	11	0-52	Paint	Paint chip	Modern	2		
98-3-47	4	11	0-52	Plaster	Plaster	Modern	1		0.1
98-3-47	4	11	0-52	Cement	Cement	Modern	2		27.3
98-3-48	4	11	52-63	Coal	Coal slag		1		1.9
98-3-49	5	1	12-38	Chert	Flake		2		
98-3-50	5	1	38-62	Chert	Flake		1		
98-3-51	5	4	11-24	Iron	Unidentified	Unidentifiable	2		
98-3-52	5	5	0-9	Iron	Square nail	Unidentifiable	1		
98-3-53	5	6	0-10	Iron	Nail frag.	Unidentifiable	1		
98-3-54	5	5	10-32	Iron	Nail frag.	Unidentifiable	1		
98-3-54	5	5	10-32	Iron	Unidentified	Unidentifiable	6		
98-3-54	5	5	10-32	Coal	Coal		1		2.5
98-3-55	5	6	32-57	Iron	Cut nail		5		
98-3-56	5	6	0-58	Iron	Nail frag.	Unidentifiable	2		
98-3-56	5	6	0-58	Coal	Coal		1		1
98-3-57	5	7	12-40	Iron	Cut nail		1		
98-3-58	5	8	10-25	Chert	Shatter		1		
98-3-58	5	8	10-25	Glass	Window glass	Modern	1		
98-3-59	5	8	0-10	Glass	Bottle glass	Modern, amber	3		
98-3-60	5	8	25-85	Glass	Bottle glass	Modern, amber	2		
98-3-61	5	9	0-10	Glass	Window glass	Modern	3		
98-3-61	5	9	0-10	Iron	Sheet iron		2		
98-3-62	5	9	10-22	Clay	Brick	Orange	1		
98-3-62	5	9	10-22	Faunal	Bone		1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-63	6	1	23-44	Chert	Flake		1		
98-3-64	6	4	0-17	Plastic	Button	Modern, molded two holes	1		
98-3-64	6	4	0-17	Aluminum	Foil	Modern	1		
98-3-64	6	4	0-17	Glass	Window glass	Modern	1		
98-3-64	6	4	0-17	Iron	Furniture hardware	Decorative corner protector	1		
98-3-64	6	4	0-17	Faunal	Bone		1		0.6
98-3-65	6	6	0-33	Iron	Cut nail		4		
98-3-65	6	6	0-33	Iron	Unidentified	Unidentifiable	4		
98-3-65	6	6	0-33	Coal	Coal		1		0.6
98-3-66	6	6	33-45	Iron	Square nail		8		
98-3-66	6	6	33-45	Coal	Coal		1		0.3
98-3-67	6	7	0-58	Faunal	Bone		1		6.7
98-3-68	6	9	26-70	Chert	Flake		1		
98-3-69	7	1	13-40	Clay	Pipe stem	Yellow glazed	1	1.75	
98-3-70	7	2	22-67	Aluminum	Foil		1		
98-3-71	7	3	0-12	Iron	Can frag.	Modern	15		
98-3-71	7	3	0-12	Aluminum	Sheet frag.	Unidentifiable	1		
98-3-72	7	3	12-70	Plastic	Tape		1		
98-3-72	7	3	12-70	Iron	Misc. frags.		5		
98-3-73	7	5	12-62	Glass	Window glass	Modern	1		
98-3-73	7	5	12-62	Coal	Coal slag		1		0.6
98-3-74	7	6	0-10	Glass	Bottle glass	Modern, clear	2		
98-3-75	7	6	10-80	Lead	Musket ball	Flattened	1		
98-3-76	8	1	0-17	Iron	Wire		3		
98-3-77	8	2	0-42	Glass	Bottle glass	Modern, clear	5		
98-3-77	8	2	0-42	Glass	Window glass	Modern	4		
98-3-77	8	2	0-42	Iron	Can key	Sardine can key	2		
98-3-77	8	2	0-42	Iron	Can frag.	Modern	8		
98-3-78	8	3	0-42	Glass	Window glass	Modern	1		
98-3-78	8	3	0-42	Brass	Shell casing	.22 caliber shell casing	1		
98-3-78	8	3	0-42	Coal	Coal slag		1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-79	8	4	0-9	Glass	Window glass	Modern	1		
98-3-80	6	3	9-33	Chert	Shatter		1		
98-3-82	2	12	0-10	Glass	Bottle glass	Modern, clear	9		
98-3-82	2	12	0-10	Iron	Wire nail		3		
98-3-82	2	12	0-10	Iron	Crown cap		1		
98-3-82	2	12	0-10	Plastic	Misc.	Cap liner	2		
98-3-82	2	12	0-10	Coal	Coal		2		0.4
98-3-82	2	12	0-10	Asphalt	Asphalt	Modern	1		23.4
98-3-83	3	10	0-41	Glass	Window glass	Modern, clear	17		
98-3-83	3	10	0-41	Glass	Bottle glass	Modern, clear	6		
98-3-83	3	10	0-41	Plastic	Misc.	Unidentifiable	2		
98-3-83	3	10	0-41	Iron	Square nail		1		
98-3-83	3	10	0-41	Paper	Paperboard	Painted white	1		
98-3-83	3	10	0-41	Coal	Coal		3		4.5
98-3-84	3	10	41-98	Chert	Flake	Secondary	1		
98-3-84	3	10	41-98	Clay	Brick	Light orange	2		
98-3-84	3	10	41-98	Glass	Window glass	Modern	1		
98-3-84	3	10	41-98	Iron	Knife, clasp	Small blade	1	68.6	
98-3-84	3	10	41-98	Iron	Cut nail		1		
98-3-84	3	10	41-98	Iron	Nail frag.		1		
98-3-85	8	5	0-63	Glass	Window glass	Modern, bluish tint	2		
98-3-85	8	5	0-63	Iron	Square nail	Unidentifiable	2		
98-3-86	8	6	0-81	Glass	Window glass	Modern	1		
98-3-86	8	6	0-81	Cement	Cement	Modern	1		
98-3-86	8	6	0-81	Faunal	Bone		1		
98-3-87	8	7	0-34	Cellophane	Cellophane		1		
98-3-87	8	7	0-34	Glass	Bottle glass	Modern, clear	1		
98-3-88	8	9	0-55	Ceramic	Whiteware	Modern, plate	1		
98-3-88	8	9	0-55	Glass	Bottle glass	Modern, amber	2		
98-3-88	8	9	0-55	Cement	Cement	Modern	1		
98-3-89	8	10	0-60	Faunal	Bone		2		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-90	9	1	0-50	Chert	Flake	Primary	1		
98-3-90	9	1	0-50	Coal	Coal slag		3		
98-3-91	9	2	0-15	Coal	Coal slag		8		6.7
98-3-93	9	5	10-40	Iron	Cut nail		1		
98-3-93	9	6	0-65	Glass	Tumbler	Modern, rim and body frags.	2		
98-3-93	9	6	0-65	Coal	Coal		1		
98-3-93	9	6	0-65	Coal	Coal slag		1		
98-3-94	10	5	0-45	Coal	Coal slag		1		
98-3-95	10	7	10-35	Clay	Brick	Orange	1		
98-3-96	10	8	0-29	Glass	Window glass	Modern	1		
98-3-97	11	1	0-6	Aluminum	Foil		1		
98-3-97	11	1	0-6	Glass	Window glass	Modern	1		
98-3-98	11	1	15-48	Plastic	Burned		1		
98-3-99	11	2	8-28	Coal	Coal		2		
98-3-100	14	17	28-65	Iron	Wrought nail	Complete	1	56.21	
98-3-101	11	5	0-12	Glass	Bottle glass	Modern, clear	1		
98-3-102	11	6	10-65	Iron	Rivet	Modern	1		
98-3-102	11	6	10-65	Coal	Coal slag		2		
98-3-103	11	8	5-15	Coal	Coal slag		3		4.3
98-3-104	12	1	0-46	Iron	Fence wire		2		
98-3-105	2	12	10-48	Ceramic	Yellowware	20th c., rim	1		
98-3-105	2	12	10-48	Glass	Bottle glass	Modern, clear, greenish, amber	4		
98-3-105	2	12	10-48	Glass	Transistor tube		1		
98-3-105	2	12	10-48	Plastic	Nossel	Red	1		
98-3-105	2	12	10-48	Plastic	Bottle	Writing on base, black	1		
98-3-105	2	12	10-48	Iron	Wire nail		5		
98-3-105	2	12	10-48	Iron	Misc.	Unidentifiable	4		
98-3-105	2	12	10-48	Stone	Balls	Used for industrial manufacturing	2		
98-3-106	12	2	16-24	Chert	Flake	Secondary	1		
98-3-107	12	4	0-21	Coal	Coal		1		1.1
98-3-108	13	6	0-62	Iron	Nut	Modern	1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-109	14	3	0-25	Glass	Bottle glass	Modern	4		
98-3-109	14	3	0-25	Coal	Coal slag		2		
98-3-110	14	18	0-70	Glass	Burned glass		1		
98-3-110	14	18	0-70	Clay	Chinking	Light gray w/ white plaster	1		2.6
98-3-110	14	18	0-70	Cement	Cement	Structural - Thin, very fine sand ?modern?	1		39.4
98-3-110	14	18	0-70	Faunal	Bone		6		7.7
98-3-110	14	3	25-49	Brass	Shell casing	.22 caliber shell casing, "HI U SPEED"	1		
98-3-111	14	4	0-37	Ceramic	Whiteware		1		
98-3-111	14	4	0-37	Iron	Can frags.		8		
98-3-111	14	4	0-37	Clay	Brick		1		
98-3-112	14	6	0-60	Coal	Coal slag		25		
98-3-113	14	5	40-53	Lead	Lead slug	Shot gun slug, modern	1		
98-3-113	14	5	40-53	Coal	Coal		1		
98-3-115	14	8	0-26	Aluminum	Cap liner		1		
98-3-115	14	8	0-26	Iron	Crown cap		1		
98-3-115	14	8	0-26	Coal	Coal		2		
98-3-116	15	2	0-25	Iron	Can lid	Modern	5		
98-3-117	15	3	0-15	Glass	Bottle glass	Modern, amber	1		
98-3-118	16	5	0-60	Chert	Flake	Secondary	2		
98-3-118	16	5	0-60	Aluminum	Shell casing	.22 caliber shot gun shell, "Super" on base	1		
98-3-118	16	5	0-60	Coal	Coal		1		1.6
98-3-118	16	5	0-60	Iron	Nail frag.	Unidentifiable	1		
98-3-119	16	6	0-29	Chert	Flake		1		
98-3-119	16	6	0-29	Coal	Coal slag		8		
98-3-120	16	7	0-20	Ceramic	Porcelain	19-20th c. Blue painted base, small conical dish	1		
98-3-120	16	7	0-20	Glass	Window glass	Modern, clear	1		
98-3-120	16	7	0-20	Iron	Square nail	Unidentifiable	1		
98-3-120	16	7	0-20	Chert	Flake		1		
98-3-121	17	2	0-30	Chert	Flake		1		
98-3-121	17	2	0-30	Glass	Bottle glass	Modern, amber	1		
98-3-122	17	4	40-74	Sand	Concretion	Unidentifiable	84		38.4

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-122	17	4	40-74	Floral	Seed	Pin cherry	1		
98-3-123	17	5	0-34	Chert	Shatter		2		
98-3-124	17	6	12-35	Chert	Flake		2		
98-3-124	17	6	12-35	Glass	Window glass	Modern, clear	3		
98-3-125	19	1	21-24	Chert	Shatter		1		
98-3-125	19	1	21-24	Iron	Can	Modern	10		
98-3-126	19	2	0-23	Glass	Bottle glass	Modern, clear	3		
98-3-126	19	2	0-23	Coal	Coal slag		1		3.2
98-3-127	19	3	5-56	Coal	Coal slag		2		3.2
98-3-128	19	4	8-31	Glass	Bottle glass	Modern, clear	2		
98-3-128	19	4	8-31	Coal	Coal slag		4		4.7
98-3-129	19	9	0-10	Glass	Bottle glass	Modern, clear	1		
98-3-129	19	9	0-10	Glass	Window glass	Modern, thick	1		
98-3-129	19	9	0-10	Cement	Cement	Modern	5		126.7
98-3-130	20	1	10-35	Glass	Window glass	Modern	1		
98-3-130	20	1	10-35	Iron	Wire		1		
98-3-130	20	1	10-35	Clay	Brick	Modern, Orange-yellow	1		
98-3-131	20	5	0-32	Iron	Wrought nail	Frag.	1		
98-3-132	27	4	8-18	Chert	Shatter		2		
98-3-133	21	2	0-20	Faunal	Bone		8		
98-3-134	22	7	0-10	Chert	Shatter		2		
98-3-134	22	7	0-10	Faunal	Bone		1		8
98-3-135	23	6	0-28	Glass	Window glass	18th c. handblown	1		
98-3-136	23	8	0-25	Iron	Can frag.	Modern	1		
98-3-137	24	2	0-32	Iron	Wire nail		1		
98-3-138	25	1	0-27	Iron	Nail frag.	Unidentifiable	1		
98-3-139	25	5	0-20	Iron	Can frag.	Modern	69		
98-3-140	25	7	0-28	Chert	Flake		1		
98-3-140	25	7	0-28	Ceramic	Pink stoneware	Modern, prob. Post 1940s	1		
98-3-140	25	7	0-28	Glass	Bottle glass	Modern, clear	1		
98-3-141	25	7	28-60	Chert	Flake		4		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-142	25	10	0-36	Glass	Burned		1		
98-3-142	25	10	0-36	errous concretio	Unidentified	Unidentifiable	5		24.9
98-3-142	25	10	0-36	Faunal	Bone		4		4.8
98-3-143	26	2	10-29	Chert	Shatter		1		9.4
98-3-144	26	4	0-22	Chert	Flake		3		
98-3-144	26	4	0-22	Ceramic	Prehistoric ceramic		1		
98-3-144	26	4	0-22	Glass	Bottle glass	Modern, amber			
98-3-144	26	4	0-22	Glass	Window glass	Modern, clear			
98-3-145	26	5	0-33	Glass	Bottle glass	Modern, clear, amber, green	11		
98-3-145	26	5	0-33	Aluminum	Shell casing	.22 caliber, shot gun shell casing	2		
98-3-146	26	6	14-33	Iron	Wire nail		2		
98-3-146	26	6	14-33	Iron	Sheet iron	Unidentifiable	2		
98-3-146	26	6	14-33	Coal	Coal slag		5		2.5
98-3-147	26	7	0-33	Glass	Bottle glass	Modern, clear, amber	4		
98-3-147	26	7	0-33	Brass	Shell casing	.22 caliber, shot gun shell casing	1		
98-3-147	26	7	0-33	Coal	Coal		2		4.2
98-3-148	27	1	0-47	Glass	Bottle glass	Modern, clear	1		
98-3-149	27	2	0-20	Plastic	Cap liner		1		
98-3-149	27	2	0-20	Plastic	Misc. frags.	Unidentifiable	2		
98-3-149	27	2	0-20	Glass	Bottle glass	Modern	8		
98-3-149	27	2	0-20	Iron	Crown cap		2		
98-3-149	27	2	0-20	Coal	Coal slag		2		
98-3-150	27	3	0-57	Glass	Bottle glass	Modern, amber, aqua, clear	4		
98-3-150	27	3	0-57	Plastic	Misc.	Unidentifiable	1		
98-3-150	27	3	0-57	Iron	Cut nail		1		
98-3-151	27	4	8-18	Ceramic	Whiteware	Body sherd	1		
98-3-151	27	4	8-18	Iron	Crown cap		1		
98-3-151	27	4	8-18	Plastic	Cap liner		1		
98-3-152	27	6	0-8	Aluminum	Shell casing	.22 caliber shot gun shell casing, "HI U SPEED"	1		
98-3-153	10	22	Surface	Copper	Scrap copper	Reused kettle frags.	5		
98-3-153	10	22	Surface	Iron	Hinge	Structural	3		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-153	10	22	Surface	Iron	File frag.		2	38 & 38.96	
98-3-153	10	22	Surface	Iron	Misc. Iron	Unidentifiable	1		
98-3-153	10	22	Surface	Lead	Waste lead	Melted - no shape	2		
98-3-154	25	7	0-38	Iron	Wire nail	5 M west of STP 7	1		
98-3-154	25	7	0-38	Coal	Coal slag		3		3.5
98-3-156	25	7.5	0-40	Leather	Glove frags.	Finger frags., machine sewn	15		
98-3-157	10	21	Surface	Copper	Scrap copper	Reused kettle frags.	3		
98-3-158	11	21	Surface	Copper	Scrap copper	Reused kettle frags.- two w/ rivets	3		
98-3-158	11	21	Surface	Copper	Unidentified	Oval, poss. hair pipe	1		
98-3-159	20.5	5	0-30	Glass	Bottle glass	Olive, poss. 18-19 c.	2		
98-3-160	18	8	0-45	Iron	Can frag.	Modern	4		
98-3-160	18	8	0-45	Coal	Coal		4		15.1
98-3-161	24	7	0-30	Glass	Bottle glass	Modern, clear	3		
98-3-161	24	7	0-30	Iron	Wire nail		1		
98-3-164	19	5	0-34	Ceramic	Whiteware	5 M east of STP 5	1		
98-3-165	17	4	0-20	Sandstone	Pipe bowl	Micmac style, broken - 5 M north of STP 4	1		
98-3-166	17	5	0-20	Chert	Shatter	5 M west of STP5	1		
98-3-166	17	5	0-20	Glass	Window glass	Modern	1		
98-3-166	17	5	0-20	Iron	Cut nail		1		
98-3-166	17	5	0-20	Coal	Coal		1		1.2
98-3-166	17	5	0-20	Faunal	Bone		1		2
98-3-167	18	12	10-73	Chert	Shatter		1		
98-3-168	8	8	0-8	Clay	Brick	Handmade, burned	1		
98-3-169	10	21	0-30	Cement	Cement	Structural	1		108.6
98-3-169	10	21	0-30	Faunal	Bone		2		5.7
98-3-170	17	4	0-40	Ceramic	Whiteware	5 m east of STP 4	2		
98-3-171	24	8	0-24	Chert	Flake		1		
98-3-171	24	8	0-24	Chert	Shatter		1		
98-3-171	24	8	0-24	Glass	Bottle glass	Modern, clear	1		
98-3-171	24	8	0-24	Iron	Unidentified	Unidentifiable	5		
98-3-171	24	8	0-24	Faunal	Tooth		1		2.3

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-172	25	7	40-72	Leather	Misc.	Modern, machine sewn	4		
98-3-173	9	22	Surface	Copper	Kettle rim lug	Bail hole, reuse	1	43	
98-3-173	9	22	Surface	Copper	Kettle rim	Rim folded over	1	31	
98-3-173	9	22	Surface	Copper	Scrap copper	One w/ rivet, reuse	3		
98-3-173	9	22	Surface	Lead	Waste lead	Melted - no shape	1		
98-3-173	9	22	Surface	Iron	Kettle frags.	Rim frag.	1		
98-3-174	14	16	0-60	Chert	Shatter		1		1.0
98-3-174	14	16	0-60	Coal	Coal slag		1		4.5
98-3-174	14	16	0-60	Faunal	Bone		1		0.0
98-3-175	12	18	0-50	Lead	Waste lead	Flattened	1		
98-3-175	12	18	0-50	Faunal	Bone		7		
98-3-176	11	21	0-50	Faunal	Bone		1		2.5
98-3-177	13	19	20-85	Limestone	Micmac pipe	Base of bowl broken off	1	27.7	
98-3-177	13	19	20-85	Flint	Gun spall	French, Honey-colored	1		
98-3-177	13	19	20-85	Glass	Window glass	18th century, heavy patination	1		
98-3-177	13	19	20-85	Clay	Chinking	Buff colored w/ striations	3		5.7
98-3-177	13	19	20-85	Limestone	Plaster	Structural	1		2.0
98-3-177	13	19	20-85	Cement	Cement	Structural - Thin, very fine sand ?modern?	2		52.1
98-3-177	13	19	20-85	Iron	Nail frag.	Poss. Cut nail	1	20	
98-3-177	13	19	20-85	Granite	FCR	Poss. Structural	2		89.5
98-3-177	13	19	20-85	Ferrous metal	Unidentified	Unidentifiable	6		
98-3-177	13	19	20-85	Faunal	Bone		171		248.1
98-3-178	10	22	65-93	Ceramic	Tin glazed earthenware	Blue & white, buff paste, glaze only on one side	1		
98-3-178	10	22	65-93	Glass	Window glass	18th century	1		
98-3-178	10	22	65-93	Glass	Unidentified	Burned blue glass, poss. Venetian glass	1		
98-3-178	10	22	65-93	Glass	Unidentified	Burned	17		
98-3-178	10	22	65-93	Brass	Trigger guard finial	French - Scroll design, fusil fin	1		
98-3-178	10	22	65-93	Flint	Gun spall	French - Pistol flint, honey colored	1		
98-3-178	10	22	65-93	Lead	Lead shot		1	.13in	
98-3-178	10	22	65-93	Iron	Chisel	Tang partial broken	1		
98-3-178	10	22	65-93	Iron	Wrought nail		6		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-178	10	22	65-93	Lead	Waste lead	Flattened	1		
98-3-178	10	22	65-93	Cement	Cement	Structural - Thin, very fine sand ?modern?	4		
98-3-178	10	22	65-93	Iron	Scrap iron	Heavily corroded	13		
98-3-178	10	22	65-93	Stone	Poss. Shatter?		1		
98-3-178	10	22	65-93	Glass	Bead, seed	Mandrel wound, purple	1		
98-3-178	10	22	65-93	Glass	Bead, seed	Mandrel wound, white	1		
98-3-178	10	22	65-93	Faunal	Bone				143.8
98-3-178	10	22	65-93	Seed	Unidentified		1		
98-3-179	12	20	0-20	Coal	Coal slag		1		
98-3-179	12	20	0-20	Faunal	Bone		9		2.7
98-3-180	22	3	26-43	Coal	Coal		1		3.1
98-3-181	12	20	20-75	Glass	Bottle glass	18th century, hand-blown	1		
98-3-181	12	20	20-75	Glass	Burned	Unidentifiable	1		
98-3-181	12	20	20-75	Flint	Flake	French, Honey-colored	1		
98-3-181	12	20	20-75	Glass	Bead, seed	Mandrel wound, white	4		
98-3-181	12	20	20-75	Glass	Bead, seed	Mandrel wound, black	1		
98-3-181	12	20	20-75	Clay	Chinking	Buff colored w/ striations	10		12.9
98-3-181	12	20	20-75	Clay	Brick	One piece w/ limestone mortar adhering	4		13.5
98-3-181	12	20	20-75	Stone	Unidentified	Burned blue-gray stone w/ carved impressions	1		1
98-3-181	12	20	20-75	Stone	Structural	Stone w/ limestone mortar adhering	1		54.7
98-3-181	12	20	20-75	Stone	Structural	Limestone	7		26.9
98-3-181	12	20	20-75	Faunal	Bone		267		159.5
98-3-182	10	1	0-30	Faunal	Bone		5		18
98-3-182	10	1	0-30	Coal	Coal slag		1		2.3
98-3-183	12	18	0-50	Glass	Window glass	18th century	1		
98-3-183	12	18	0-50	Glass	Bottle glass	18th century, hand-blown	1		
98-3-183	12	18	0-50	Silver	Button	Silver gilt 3 part button w/ flat shank (eye)	1		
98-3-183	12	18	0-50	Faunal	Bone		1	20.4	
98-3-184	13	20	0-80	Stone	Granite		2		
98-3-185	12	19	0-110	Glass	Bottle glass	18th century, hand-blown	4		
98-3-185	12	19	0-110	Flint	Gun spall	Pistol flint	1		

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-185	12	19	0-110	Glass	Bead, seed	Mandrel wound, white	8		
98-3-185	12	19	0-110	Glass	Bead	Drawn, white	1		
98-3-185	12	19	0-110	Iron	Axe blade	Blade frag. Only	2		
98-3-185	12	19	0-110	Iron	Wrought nail		7		
98-3-185	12	19	0-110	Iron	Scrap iron	Thin sheet	3		
98-3-185	12	19	0-110	Clay	Chinking	Reddish-brown to lt. Gray w/ striations	5		45.6
98-3-185	12	19	0-110	Clay	Brick	Orange-brown	2		21
98-3-185	12	19	0-110	Cement	Cement	Structural - Thin, very fine sand ?modern?	6		588.9
98-3-185	12	19	0-110	Stone	FCR	Granite and sandstone	5		
98-3-185	12	19	0-110	Faunal	Bone		56		119
98-3-186	10	20	0-15	Iron	Bar		1		
98-3-187	10	21	0-32	Iron	Misc. Iron	Unidentifiable	2		
98-3-188	11	18	0-40	Bake-a-lite	Audio record	78 rpm	9	2.53 thick	
98-3-188	11	18	0-40	Ceramic	Staffordshire slip	Lead glazed, brown slip, mug handle	3		
98-3-188	11	18	0-40	Clay	Pipe stem	1750-1800	1	1.42 dia.	
98-3-188	11	18	0-40	Flint	Gun flint	English, gray, frag.	1		
98-3-188	11	18	0-40	Copper	Kettle frags.	Reuse, several layers of repairs	1		
98-3-188	11	18	0-40	Iron	Wrought nail	Heavily corroded	3		
98-3-188	11	18	0-40	Faunal	Bone		37		340.1
98-3-189	11	20	0-60	Iron	Wrought nail		1		
98-3-189	11	20	0-60	Iron	Scrap iron		1		
98-3-189	11	20	0-60	Cement	Cement	Structural - Thin, very fine sand ?modern?	1		13.7
98-3-189	11	20	0-60	Coal	Coal slag		1		2.0
98-3-189	11	20	0-60	Faunal	Bone		32		74.1
98-3-190	10	21	32-64	Glass	Window glass	18th century	1		
98-3-190	10	21	32-64	Clay	Chinking	Buff colored w/ striations	1		1.0
98-3-190	10	21	32-64	Clay	Brick	Light orange	4		2.5
98-3-190	10	21	32-64	Glass	Bead, seed	Mandrel wound, white	1		
98-3-190	10	21	32-64	Faunal	Bone		59		17.7
98-3-191	13	20	0-80	Glass	Bead, seed	Mandrel wound, white	1		
98-3-191	13	20	0-80	Lead	Lead shot		1	.26in	

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-191	13	20	0-80	Clay	Brick	Light orange	1		1.1
98-3-191	13	20	0-80	Ferrous metal	Unidentified	Unidentifiable	10		
98-3-191	13	20	0-80	Faunal	Bone		38		16.1
98-3-194	15	18	30-60	Faunal	Bone		14		8.9
98-3-194	15	18	30-60	Ceramic	Modern Porcelain	Hard paste porcelain, machine molded, plate rim	1		
98-3-194	15	18	30-60	Ceramic	Stoneware	Buff-gray, molded, bird bath?	1		
98-3-194	15	18	30-60	Glass	Bottle glass	Modern, mold blown, 20th century	1		
98-3-194	15	18	30-60	Iron	Wire nail		2		
98-3-194	15	18	30-60	Iron	Bar	Unidentifiable	1		
98-3-194	15	18	30-60	Faunal	Bone		1		0.6
98-3-195	12	18	0-50	Coal	Coal slag		3		
98-3-195	12	18	0-50	Faunal	Bone		8		7.2
98-3-196	25	7	0-28	Iron	Sheet iron	5 M east of STP 7	2		
98-3-197	N177	W160	15	Iron	Wire nail		1		
98-3-198	13	18	18-48	Plastic	Misc. Plastic	Unidentifiable	3		
98-3-198	13	18	18-48	Ceramic	Creamware	Plate rim	1		
98-3-198	13	18	18-48	Faunal	Bone		13		29.4
98-3-199	8	22	0-80	Ceramic	Creamware	Bowl body frag.	1		
98-3-199	8	22	0-80	Glass	Burned glass		3		
98-3-199	8	22	0-80	Clay	Brick	Orange	1		10.1
98-3-199	8	22	0-80	Faunal	Bone		30		41.8
98-3-200	16	7	11-43	Coal	Coal slag	5M west of STP 7	3		6.7
98-3-201	16	7	5-47	Coal	Coal slag	5 M south of STP 7	1		0.5
98-3-202	9.6	20.6	0-50	Limestone	Micmac pipe bowl	Carved limestone w/ "V" & circular incised markings	1		
98-3-202	9.6	20.6	0-50	Coal	Coal		1		0.5
98-3-202	9.6	20.6	0-50	Cement	Cement	Structural - Thin, very fine sand ?modern?	4		404.1
98-3-202	9.6	20.6	0-50	Iron	Iron strap	Modern	1		
98-3-202	9.6	20.6	0-50	Faunal	Bone		11		200.6
98-3-203	15	15	0-15	Coal	Coal slag		2		0.9
98-3-203	15	15	0-15	Glass	Bottle glass	Modern, mold blown, 20th century	2		
98-3-204	15	13	0-34	Coal	Coal slag		1		16.5

Acc	Trans	STP	Depth	Material	Functional Type	Description	Count	Size	Weight
98-3-205	14	15	13-46	Floral	Nut	Unidentifiable	4		0.3
98-3-206	14	19	0-54	Coal	Coal slag		4		7.4
98-3-206	14	19	0-54	Faunal	Bone		1		0.2
98-3-208	10	22	0-65	Plastic	Misc. Plastic	White, poss. Cup frag.	1		
98-3-209	14	18	Surface	Iron	Horseshoe frag.		1		
98-3-211			Surface	Glass	Bead, seed	Mandrel wound, white	1		
98-3-211			Surface	Iron	Knife frag.	Blade frag.	1		
98-3-211			Surface	Faunal	Carved bone	Unidentifiable	1		
98-3-211			Surface	Clay	Chinking	Gray	2		

APPENDIX C

FAUNAL REMAINS BY SPECIES AND PROVENIENCE

Christine McMillan identified the faunal remains recovered during the 1998 field investigations including those collected by Tom Kelley and donated to the project. This Appendix serves to summarize the distribution of all identifiable elements by genus/species and provenience. Common names are used only; see Table 4.1 for their taxonomic equivalents.

Transect/STP Depth (cm) Accession No.	T11 STP18 0-40 98-3-188	T22 STP7 0-10 98-3-134	T12 STP19 0-110 98-3-185	T24 STP8 0-24 98-3-171	T17 STP5 0-20 98-3-166	T13 STP19 20-85 98-3-177	T12 STP2 20-75 98-3-181
Genus/Species							
Mammal							
White-tailed Deer	10	1	6	1	1	6	9
Domestic Cow							
Raccoon						1	1
Muskrat							1
Eastern Cottontail							
Domestic Pig						1	
Black Bear							
Bird							
Wild Turkey			3				
Duck or Goose						1	
Unknown species							5
Amphibian							
Frog							
Fish							
European Carp							
Total	10	1	9	1	1	9	16

Genus/Species	T10 STP22 65-93 98-3-178	T12 STP18 0-50 98-3-183	Kelley's Collection 98-3-0	T9.6 STP20.6 0-50 98-3-202	T11 STP20 0-60 98-3-189	T8 STP22 0-80 98-3-199	T12 STP 18 0-50 98-3-175	T13 STP18 8.0-48 98-3-198
Mammal								
White-tailed Deer	6	1	1	1	4	3	2	1
Domestic Cow				1				
Raccoon								
Muskrat								
Eastern Cottontail								
Domestic Pig	3							
Black Bear			1					
Bird								
Wild Turkey								
Duck or Goose	2							
Unknown species								
Amphibian								
Frog	1							
Fish								
European Carp				1				
Total	12	1	2	3	4	3	2	1

Genus/Species	T8 STP6 0-81 98-3-86	T5 STP9 10.0-22 98-3-62	T6 STP4 0-17 98-3-64	Total
Mammal				
White-tailed Deer				53
Domestic Cow				1
Raccoon	1			3
Muskrat				1
Eastern Cottontail			1	1
Domestic Pig				4
Black Bear				1
Bird				
Wild Turkey				3
Duck or Goose				3
Unknown species		1		6
Amphibian				1
Frog				
Fish				
European Carp				1
Total	1	1		78